COMPAQ

ProLiant ML330e/ML330 Server

Setup and Installation Guide

Second Edition (March 2001)
Part Number 173868-002
Compaq Computer Corporation

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About This Guide

This guide is designed to be used as step-by-step instructions for the installation of a Compaq ProLiant ML330e/ML330 server and as a reference for operation, troubleshooting, and future upgrades.

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys are displayed in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input is displayed in a different typeface and in uppercase.
FILENAMES	File names are displayed in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements are displayed in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements are displayed in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to *enter* information, type the information, and then press the **Enter** key.

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Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings:

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

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Symbols on Equipment

These symbols may be located on equipment in areas where hazardous conditions may exist:

This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult your documentation for specific details.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user- or field-serviceable parts. Do not open for any reason.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol, on an RJ-45 receptacle, indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

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Getting Help

If you have a problem and have exhausted the information in this guide, you can obtain further information and other help from the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Support Phone Center at 1-800-OK-COMPAQ. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet:

http://www.compaq.com

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level
- Detailed, specific questions

Compaq Website

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website by logging on to the Internet:

http://www.compaq.com

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Compaq Authorized Reseller

For the name of your nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers:

  http://www.compaq.com

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Chapter 1

Server Features

The Compaq *ProLiant*™ ML330e/ML330 server delivers the latest performance features at an affordable price. As the primary server in a small-to-medium business, the ProLiant ML330e/ML330 server is ideal for applications such as file/print, simple database, and remote access. This business-critical server delivers Intel Pentium III technology, error checking and correcting (ECC) memory, easy expandability, and leading server management tools such as *Compaq Insight Manager*™ software, BIOS Setup utility, and ROM Based Setup Utility (RBSU).

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Server features include:

- Intel 256-KB Pentium III processor with 133-MHz front-side system bus
- 64 MB of PC133-MHz Registered, error checking and correcting (ECC), synchronous dynamic random access memory (SDRAM) DIMMs, upgradable to 2 GB. Models of the ProLiant ML330 server, 933 MHz and higher, come standard with 128 MB of PC133-MHz ECC, SDRAM DIMMs.
- Capacity for five 36-GB hard drives for a maximum of 180 GB of internal storage (ProLiant ML330 server) or four 40-GB hard drives for a maximum of 160 GB of internal storage (ProLiant ML330e server)
- Four removable media bays (three available)
- IDE CD-ROM drive
- 1.44-MB, 3.5-inch diskette drive
- Integrated single-channel Wide Ultra2 SCSI Controller (ProLiant ML330 server) or an integrated dual-cbannel ATA/100 Controller (ProLiant ML330e server)
- Integrated PCI 10/100 Wake on LAN NIC
- Integrated ATI Rage XL Video Controller
- Three available 32-bit PCI slots and two 64-bit PCI slots
- CE Mark-compliant power supply

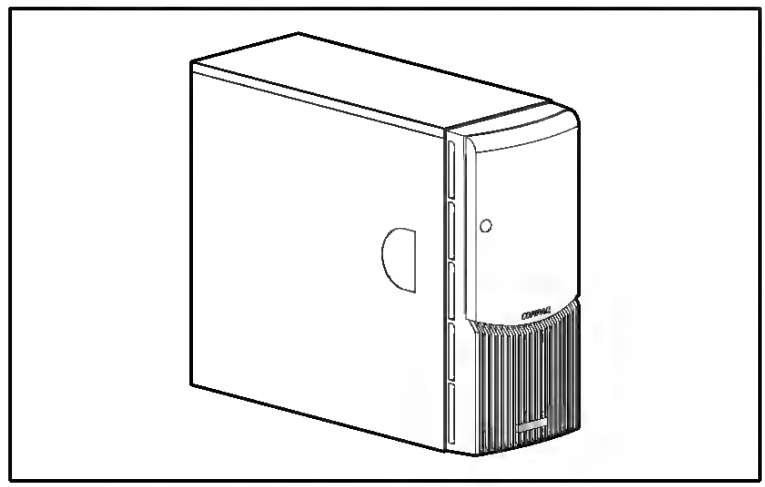

Figure 1-1. Compaq ProLiant ML330e/ML330 server

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Standard Features

The following features are standard on the ProLiant ML330e/ML330 server, unless otherwise noted.

Drive Bay Components

The ProLiant ML330e/ML330 server supports a maximum of seven internal drive bays. Figure 1-2 and Table 1-1 show the drive configuration.

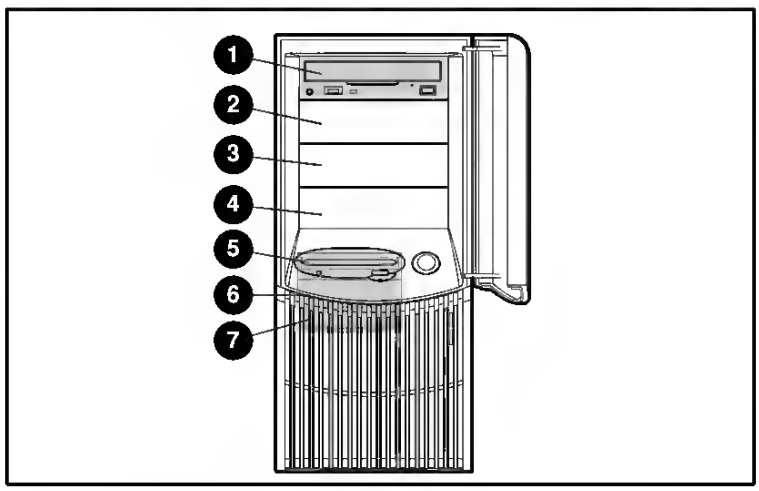

Figure 1-2. Identifying drive positions

Table 1-1
Drive Bay Components and Dimensions

Item	Component	Dimension
❶	IDE CD-ROM drive bay	5.25 in x 1.60 in
❷	Available removable media bay	5.25 in x 1.60 in
❸	Available removable media bay	5.25 in x 1.60 in
❹	Available removable media bay	5.25 in x 1.60 in
❺	1.44-MB diskette drive bay	3.5 in x 1.0 in
❻	Hard drive bay	3.5 in x 1.0 in
❼	Hard drive bay	3.5 in x 1.0 in

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Front Panel Components

Figure 1-3 and Table 1-2 show the front panel components, including buttons and LEDs.

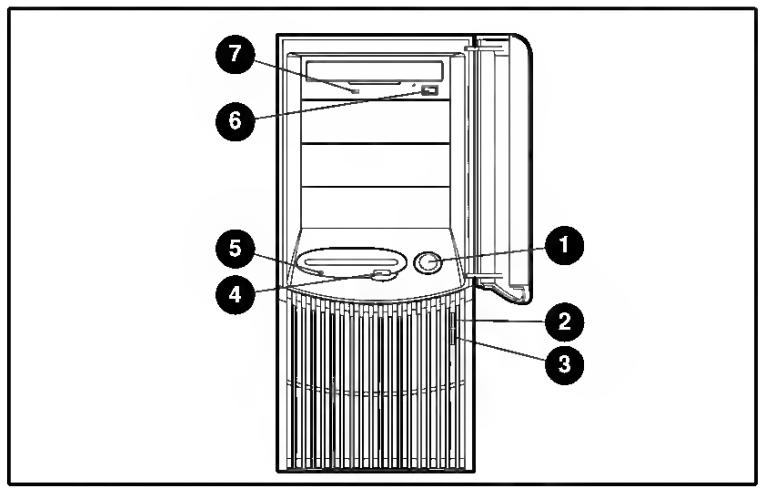

Figure 1-3. Front panel components

Table 1-2
Front Panel Components

Item	Component	Item	Component
❶	Power button	❺	Diskette drive activity LED
❷	Power LED	❻	CD-ROM drive eject button
❸	Hard drive activity LED	❼	CD-ROM drive activity LED
❹	Diskette drive eject button		

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Rear Panel Connectors

Figure 1-4 and Table 1-3 show the connectors on the rear panel of the ProLiant ML330e/ML330 server.

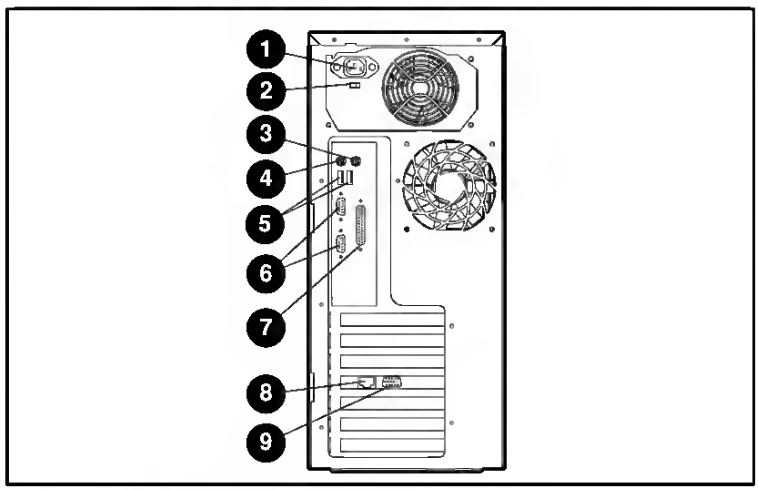

Figure 1-4. Identifying rear panel connectors

Table 1-3
Rear Panel Connectors

Item	Connector	Item	Connector
❶	Power cord connector	❻	Serial port connectors
❷	Voltage selector switch	❼	Parallel port connector
❸	Mouse connector	❽	RJ-45 Ethernet for NIC connector
❹	Keyboard connector	❾	Video connector
❺	USB port connectors (ProLiant ML330e server only)		

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System Board Components

Figure 1-5 and Table 1-4 show the components and connectors of the ProLiant ML330e/ML330 server system board.

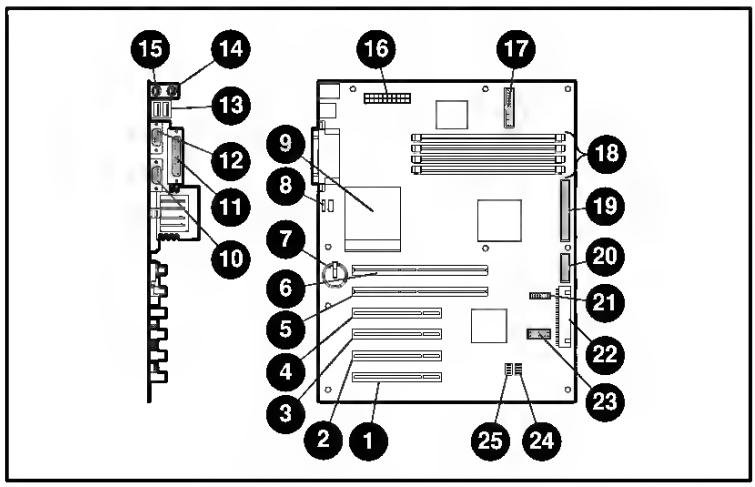

Figure 1-5. Identifying system board components

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Table 1-4
System Board Components

Item	Component	Item	Component	Item	Component
❶	32-bit PCI slot 6	❿	Serial port connector B	⓲	DIMM sockets (four)
❷	32-bit PCI slot 5	⓫	Parallel port connector	⓳	Primary IDE connector
❸	32-bit PCI slot 4	⓬	Serial port connector A	⓴	Power button connector
❹	32-bit PCI slot 3 (Server Feature Board)	⓭	USB port connectors (ProLiant ML330e server only)	㉑	Server Management Information Cable (SMIC) connector
❺	64-bit PCI slot 2	⓮	Mouse connector	㉒	Secondary IDE connector
❻	64-bit PCI slot 1 (half-length)	⓯	Keyboard connector	㉓	Remote Insight Lights-Out Edition board connector
❼	Battery	⓰	Power supply connector	㉔	System configuration switch (SW2)
❽	System fan connector	⓱	Diskette drive connector	㉕	Reserved processor switch (SW1)
❾	Processor				

IMPORTANT: Power for the Remote Insight Lights-Out Edition board must come from the external power supply of the Remote Insight Lights-Out Edition board and not from the system board.

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Processors and System Memory

- Pentium III processor with integrated 256-KB Cache Single Processor capability
- ECC for memory error detection and correction
- 64-MB, PC133-MHz ECC Registered SDRAM DIMM system memory, expandable to 2 GB
- Support for 64-MB, I28-MB, 256-MB, or 512-MB, PC133-MHz ECC Registered SDRAM DlMMs
- Support for up to four Registered SDRAM DlMMs (PC133-MHz ECC), installed one at a time in any order

Expansion Slots

- Six expansion slots (five available): four 32-bit PCI slots (three available) and two 64-bit PCI slots
- PCI bus that provides peripheral transactions at a bus clock speed of 33 MHz

Disk Controllers

- Integrated single-channel Wide Ultra2 SCSI controller on the PCI local bus (ProLiant ML330 server). The controller provides an internal SCSI bus.
- Integrated dual-channel ATA/I00 controller (ProLiant ML330e server)
- Optional controller boards for controller duplexing or expanding storage capacity available

Network Controller

- Integrated PCI 10/100 Wake on LAN NIC
- Preboot Execution Environment (PXE) support for downloading complete operating system configurations from your network (ProLiant ML330e servers only)

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Ports/Connectors

- Serial (2)
- Parallel
- Keyboard
- Mouse
- USB (2)—Available with the ProLiant ML330e server only

BIOS

- *ROMPaq*™ utility for BIOS firmware upgrade
- BIOS Setup utility for system configuration (ProLiant ML330 server)
- ROM Based Setup Utility (RBSU) for system configuration (ProLiant ML330e server)

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Server Feature Board Components (ProLiant ML330 Server)

Figure 1-6 and Table 1-5 show the components of the Server Feature Board for the ProLiant ML330 server with a standard integrated single-channel Wide Ultra2 SCSI controller.

NOTE: For Server Feature Board components for the ProLiant ML330e server, refer to Figure 1-7 and Table 1-6 in the following section "Server Feature Board Components (ProLiant ML330e Server)."

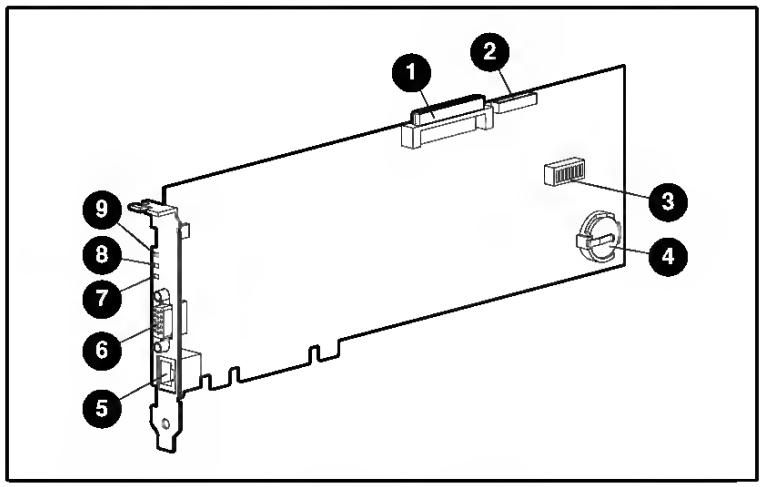

Figure 1-6. Identifying Server Feature Board components (ProLiant ML330 server)

Table 1-5
Server Feature Board Components (ProLiant ML330 Server)

Item	Component	Item	Component
❶	SCSI channel connector	❻	Video connector
❷	Server Management Information Cable (SMIC) connector	❼	Network speed indicator
❸	Server Feature Board configuration switch	❽	Network link status indicator
❹	Replaceable lithium battery (CR2032)	❾	Network activity indicator
❺	RJ-45 Ethernet connector for NIC		

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Server Feature Board Components (ProLiant ML330e Server)

Figure 1-7 and Table 1-6 show the components of the Server Feature Board for the ProLiant ML330e server with a standard integrated dual-channel ATA/100 controller.

NOTE: For Server Feature Board components for the ProLiant ML330 server, refer to Figure 1-6 and Table 1-5 in the preceding section "Server Feature Board Components (ProLiant ML330 Server)".

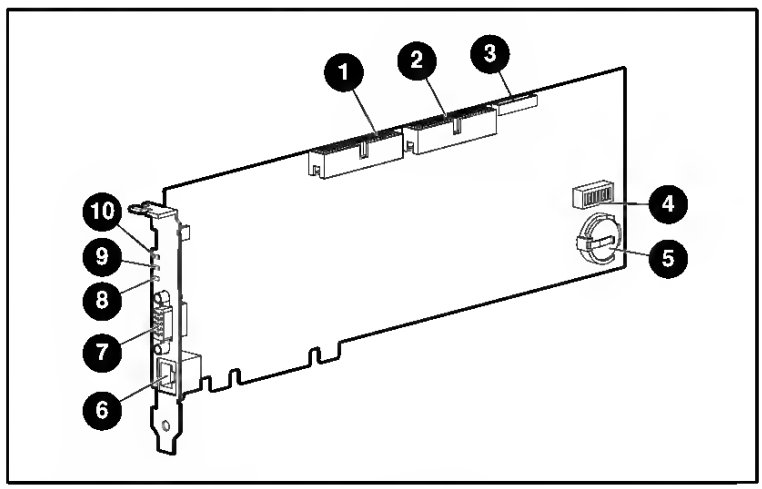

Figure 1-7. Identifying Server Feature Board components (ProLiant ML330e server)

Table 1-6
Server Feature Board Components (ProLiant ML330e Model)

Item	Component	Item	Component
❶	ATA/100 connector (primary)	❻	RJ-45 Ethernet connector for NIC
❷	ATA/100 connector (secondary)	❼	Video connector
❸	Server Management Information Cable (SMIC) connector	❽	Network speed indicator
❹	Server Feature Board configuration switch	❾	Network link status indicator
❺	Replaceable lithium battery (CR2032)	❿	Network activity indicator

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Interfaces

- Integrated single-channel Wide Ultra2 SCSI controller (ProLiant ML330 server)
- Integrated dual-channel ATA/100 controller (ProLiant ML330e server)
- Integrated PCI 10/100 Wake on LAN NIC

Video

- Integrated ATI Rage XL Video controller providing maximum resolution of 1600 x 1200 noninterlaced at 65 K colors
- Support for SVGA, VGA, and EGA graphics resolution
- 4-MB SDRAM video memory

Power Supply

- CE Mark-compliant power supply

Warranty

The Compaq Three-Year Pre-Failure Warranty helps prevent unplanned shutdowns of the system by allowing for the replacement of covered parts before they fail. The warranty covers processors, memory, and hard drives. Compaq Insight Manager, included with the system, must be installed for the Compaq Pre-Failure Warranty to be in effect. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center or refer to the Limited Warranty Statement included with your server for details.

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Server Configuration and Management

The ProLiant ML330e/ML330 server offers an extensive set of features and optional tools to support effective server management and configuration, including:

- Configuration Utilities
- Compaq *SmartStart*™ and Support Software
- Compaq Insight Manager
- Diagnostics tools (POST, DIAGS, ASR)

Configuration Utilities

The BIOS Setup utility (**F10** setup), for the ProLiant ML330 server, and RBSU (**F9** setup), for the ProLiant ML330e server, perform a wide range of configuration activities and utilities, including the following:

- Viewing system information
- Selecting the operating system
- Configuring system devices and installed options
- Selecting the primary boot controller
- Managing storage options
- Backing up and restoring saved configurations
- ROMPaq utilities to upgrade flash BIOS

Compaq SmartStart and Support Software

SmartStart, located on the SmartStart and Support Software CD, is the intelligent way to set up your Compaq server. SmartStart includes:

- Driver updates
- Assisted operating system installations

For information concerning SmartStart, refer to the Server Setup and Management pack included in the shipping box.

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Compaq Insight Manager

Compaq Insight Manager, which is loaded from the Compaq Management CD, is an easy-to-use software utility for collecting server information. Compaq Insight Manager performs the following functions:

- Forwards server alerts and fault conditions
- Monitors fault conditions and server performance
- Controls server security and configuration
- Remotely controls server
- Initiates rapid recovery services

Diagnostic Tools

The software and firmware diagnostic tools available for your use include:

- Power-On Self-Test (POST)
- Diagnostics (DIAGS)
- Automatic Server Recovery (ASR)

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Security Features

Security features include:

- Setup Password
- Power-on Password
- Diskette Drive Control
- Diskette Write Control
- Diskette Boot Override
- CD Boot Override
- Intruder Alert—ProLiant ML330 servers only

A hardware-associated security feature is the intruder alert. An intruder alert message is displayed if the front bezel has been unlatched or removed. This feature is available only on ProLiant ML330 servers. Refer to Chapter 5, "Server Configuration and Utilities," for information on enabling intruder alert.

Most security features are established through the setup and configuration utilities for the server. Refer to Chapter 5 for more information about the setup utilities used with your server. For information concerning server security features, refer to the SmartStart and Support Software CD included in the shipping box.

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Chapter 2

Overview of Server Installation

The following instructions are provided as an overview for first-time installation of your Compaq ProLiant ML330e/ML330 server. If you have any problems, contact your Compaq authorized reseller.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect power from the server by unplugging the power cord from either the electrical outlet or the server.
- Do not place anything on power cords or cables. Arrange them so that no one can accidentally step on or trip over them. Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.

CAUTION: Electrostatic discharge can damage electronic components. Be sure that you are properly grounded (earthed) before beginning any installation procedure. See Appendix B, "Electrostatic Discharge," for more information.

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Selecting a Site

Make sure that the installation area that you select has the following features:

- A sturdy, level installation site that includes dedicated and properly grounded (earthed) circuits, air conditioning, and static electricity protection

IMPORTANT: The ProLiant ML330e/ML330 server must be operated only when in an upright, vertical position.

- 7.6 cm (3.0 inches) clearance on all sides of server for proper ventilation
- A separate electrical circuit for the server

CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

Unpacking the Server

Unpack the server, keyboard, and cables according to the instructions and illustrations printed on the Quick Start poster.

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Locating Materials

Locate the following materials that were shipped with your ProLiant ML330e/ML330 server:

- Keyboard
- Mouse
- Power cord
- Documentation and software packs inside the shipping box

In addition to these supplied items, you may need:

- Torx T-15 screwdriver
- Phillips #2 screwdriver
- Hardware options
- Uninterruptible power supply (UPS)
- Ethernet cable
- Monitor
- Application software

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Connecting the Power Cord and Peripheral Devices

After all optional internal hardware devices have been installed in the server, connect the power cord and peripheral devices to the connectors located on the rear panel of the server as indicated in Figure 2-1 and Table 2-1.

See Chapter 3, "Hardware Options Installation," or see the options kits for detailed instructions.

WARNING: To reduce the risk of electric shock or fire, do not plug telecommunications/telephone connectors into the network interface controller (NIC) receptacle.

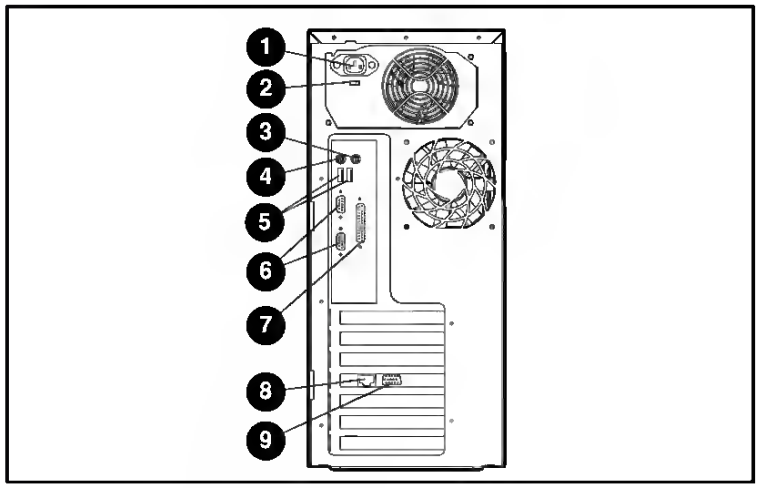

Figure 2-1. Identifying rear panel connectors

Table 2-1
Rear Panel Connectors

Item	Connector	Item	Connector
❶	Power cord connector	❻	Serial port connectors
❷	Voltage selector switch	❼	Parallel port connector
❸	Mouse connector	❽	RJ-45 Ethernet for NIC connector
❹	Keyboard connector	❾	Video connector
❺	USB port connectors (ProLiant ML330e server only)		

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Installation Sequence

CAUTION: If your server has a factory-installed operating system (OS), configure the server using the instructions in the following section, "Preconfigured Operating System," or data on the server could be lost. Otherwise, follow the instructions in the "Operating System Purchased Separately" section later in this chapter.

Preconfigured Operating System

If you ordered your server with the factory-installed operating system, everything required to install your operating system is already on the server. Refer to the steps provided in the *Compaq Factory-Installed Operating System Software User Guide*.

CAUTION: Use the SmartStart and Support Software CD as recovery software only. Starting the server from the SmartStart and Support Software CD reconfigures the system and causes all data on the server to be lost.

To install your server:

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect power from the server by unplugging the power cord from either the electrical outlet or the server.
- Do not place anything on power cords or cables. Arrange them so that no one can accidentally step on or trip over them. Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.

CAUTION: Before powering up the server, make sure that the power cord and all cables have been properly connected. See Figure 2-1 and Table 2-1 for information on the rear panel connectors of the ProLiant ML330e/ML330 server.

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1. After the cables have been connected to the server, you are ready to power up the ProLiant ML330e/ML330 server. To power up your server:
   a. To release the door latch, press and release the circular indentation on the left side of the drive bay door ❶.
   b. Swing the drive bay door open ❷.
   c. Press the center of the power button on the front of the server ❸.

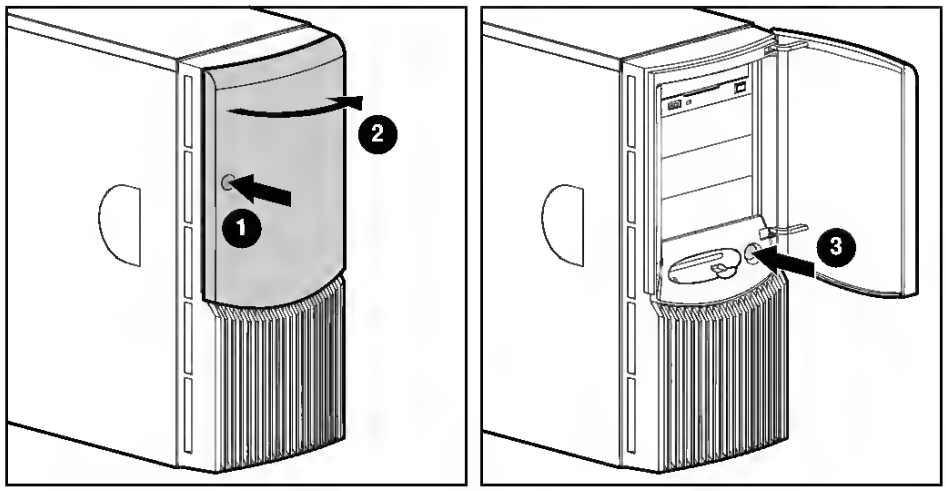

Figure 2-2. Powering up the server

2. To complete the factory-installed operating system process, follow the screen instructions.
3. Refer to Chapter 5, "Server Configuration and Utilities," and the Compaq Management CD for information about installing the Compaq Management Agents for your operating system.
4. After verifying your server configuration, back up your system configuration. Refer to the SmartStart and Support Software CD for further information on backing up your system configuration.
5. Install any application software.

To install additional options not preinstalled on your server, follow the steps in Chapter 3.

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Operating System Purchased Separately

If you purchased your operating system separately, you must install it using the SmartStart and Support Software CD. Refer to the Server Setup and Management pack for instructions on using SmartStart. The first time the server is configured, the SmartStart program automatically creates a necessary partition on your hard drive. This partition cannot be used for any other purpose and is not a traditional system partition.

Follow this sequence when installing your operating system for the first time:

CAUTION: Use the SmartStart and Support Software CD as recovery software only. Starting the server from the SmartStart and Support Software CD reconfigures the system and causes all data on the server to be lost.

CAUTION: To reduce the risk of damage to your server, complete the installation process by following the detailed procedures provided later in this chapter and in other sections of the setup and installation guide.

1. Review all guidelines listed from the beginning of this chapter through step 1 of the "Preconfigured Operating System" section.
2. To select the type of operating system and set the date and time, run the setup utility for your server:
   - For ProLiant ML330e servers, run the ROM Based Setup Utility (RBSU) by pressing the **F9** key (when prompted).
   - For ProLiant ML330 servers, run the BIOS Setup utility by pressing the **F10** key (when prompted).

     For more information on the BIOS Setup utility or RBSU, see Chapter 5, "Server Configuration and Utilities."
3. Insert the SmartStart and Support Software CD into the CD-ROM drive. Refer to "Configuring the Server" in the following section for complete instructions on inserting the CD-ROM. For SmartStart and Support Software CD initialization procedures, refer to the Server Setup and Management pack shipped with your server or see Chapter 5.
4. To manage the server, install Compaq Insight Manager. For Compaq Management CD initialization procedures, refer to the Server Setup and Management pack shipped with your server.

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5. Register your server. For server registration information, refer to the Server Setup and Management pack shipped with the server or register online at http://www.compaq.com/register. You are required to provide your name, server serial number, and operating system (OS) information. You can also use the SmartStart Server Profile Diskette to register after configuring your server with SmartStart. Follow the instructions on the Compaq website, and then insert the SmartStart Server Profile Diskette when prompted.

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Configuring the Server

The server setup utilities can be used to configure the server and options.

- To initiate the BIOS Setup utility for the ProLiant ML330 server, press the **F10** key when prompted during the startup process.
- To initiate RBSU for the ProLiant ML330e server, press the **F9** key when prompted during the startup process.

The SmartStart and Support Software CD contains ROMPaq and updated drivers, and assists with the operating system installation. To use the SmartStart and Support Software CD:

1. Locate the SmartStart and Support Software CD in the Server Setup and Management pack.
2. After you power up the server, press the CD-ROM drive eject button.
3. Insert the SmartStart and Support Software CD into the CD-ROM drive with the labeled side up. Handle the CD by its edges, not by the flat surfaces of the disc.

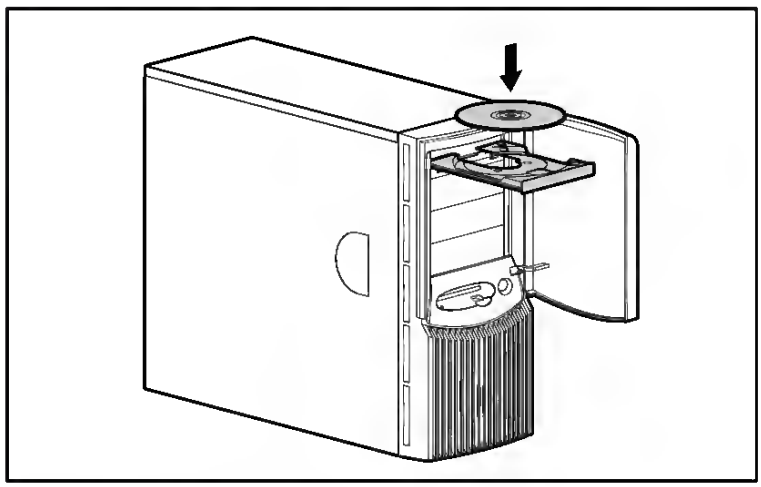

Figure 2-3. Inserting the CD into the CD-ROM drive

4. When the busy indicator turns green, the SmartStart sequence begins. Refer to the SmartStart and Support Software CD for more information.

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Chapter 3

Hardware Options Installation

This chapter provides procedures for installing, removing, and replacing hardware options on the Compaq ProLiant ML330e/ML330 server.

CAUTION: Electrostatic discharge can damage electronic components. Be sure that you are properly grounded before beginning any installation procedure.

NOTE: As a security measure on the ProLiant ML330 server, an intruder alert message (if enabled) is displayed at startup if the front bezel has been unlatched. Refer to Chapter 5 "Server Configuration and Utilities" for information on enabling intruder alert.

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Shutting Down the Server

Before installing or removing options, prepare your server by following these steps:

CAUTION: Failure to follow these directions could result in damage to equipment or loss of information.

1. Back up your server data and record configuration information.
2. Shut down the operating system, as directed in your operating system instructions.
3. Power down the server by pressing the power button on the front of the server.

IMPORTANT: To completely remove all power from the server, you must disconnect the power cord. The front panel power button may not completely shut down power to the server.

4. Remove the power cord.

WARNING: To reduce the risk of injury from electric shock or damage to the equipment when installing an upgrade, make sure that the power to the server is turned off. Remove all AC power cords to completely disconnect power from the system.

5. Disconnect any other external equipment connections to the server.

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Removing the Front Bezel

To remove the front bezel:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the front bezel.

1. Follow the steps in "Shutting Down the Server" earlier in this chapter.
2. Push up on the latch at the bottom of the front bezel ❶.
3. Swing the front bezel upward and slide it out and away from the chassis ❷.

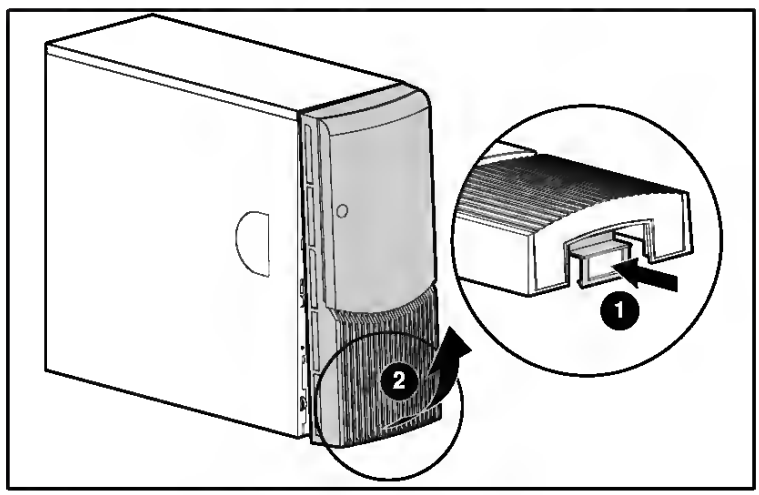

Figure 3-1. Removing the front bezel

To replace the front bezel, reverse steps 2 and 3.

NOTE: When replacing the front bezel, make sure that the top hinge points are properly placed in the chassis before rotating the front bezel into its original position.

NOTE: As a security measure on the ProLiant ML330 server, an intruder alert message (if enabled) is displayed at startup if the front bezel has been unlatched. Refer to Chapter 5 for information on enabling intruder alert.

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Removing the Access Panel

To remove the access panel:

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

CAUTION: Do not operate the server while the access panel is removed. This panel is an integral part of the cooling system and removing the panel while the system is running may adversely affect data integrity.

1. Remove front bezel. See "Removing the Front Bezel" earlier in this chapter.
2. Remove the screw located on the left side of the front chassis ❶.
3. Slide the access panel forward, pull from the top of the access panel, and then lift the panel from the chassis ❷.

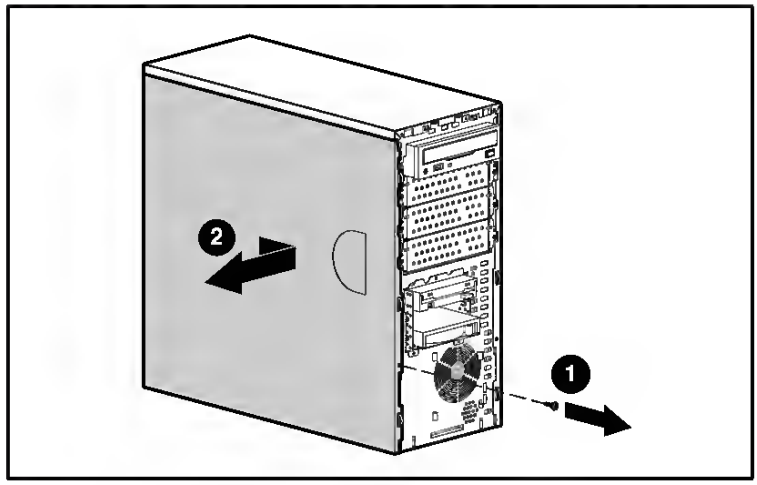

Figure 3-2. Removing the access panel

NOTE: Turn the access panel over to locate the System Configuration label. This label provides information about the system board of the ProLiant ML330e/ML330 server.

To replace the access panel, reverse steps 2 and 3.

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Removing the Bezel Blanks

To remove a bezel blank from the front bezel:

> **CAUTION:** To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the front bezel

1. Remove front bezel. See "Removing the Front Bezel" earlier in this chapter.
2. On the back of the front bezel, pinch the tabs on each end of the bezel blank toward each other ❶, and then push the bezel blank through the front bezel ❷.

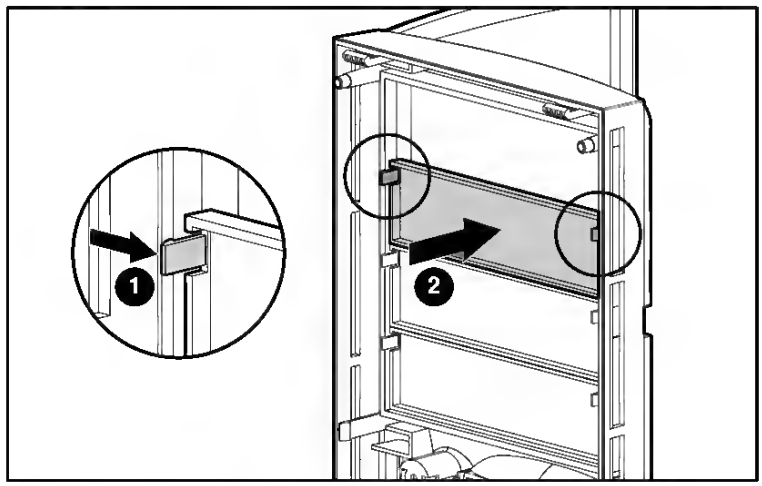

Figure 3-3. Removing a bezel blank

To replace a bezel blank, reverse steps 1 and 2.

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Removing a Drive Tray

NOTE: The drive trays in the removable media bays can be used to mount internal 3.5-inch hard drives. The rails mounted inside the drive trays can be removed and used to mount other devices in the removable media bays.

To remove a drive tray from a removable media bay:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

1. Follow the steps in "Removing the Access Panel" earlier in this chapter.
2. Remove the screws on each side of the drive tray.
3. Gently slide the drive tray out of the front of the chassis.

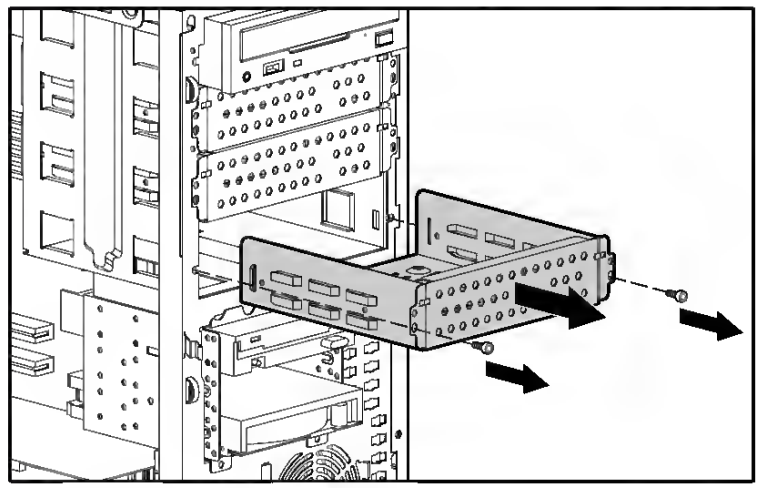

Figure 3-4. Removing the drive tray

To replace a drive tray, reverse steps 2 and 3.

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Storage Devices

This section discusses removal and replacement procedures for the storage devices supported on the ProLiant ML330e/ML330 server.

Drive Positions

The ProLiant ML330e/ML330 server supports a maximum of seven internal drive bays. Figure 3-5 and Table 3-1 show the drive configuration.

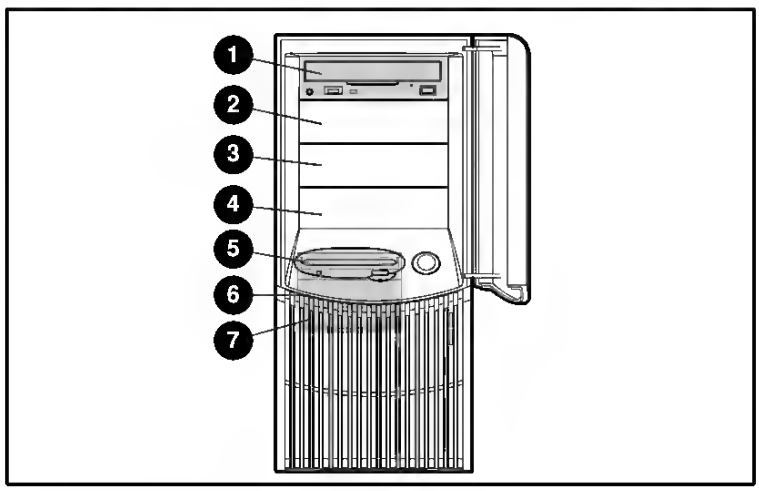

Figure 3-5. Identifying drive positions

Table 3-1
Drive Bay Dimensions

Item	Drive Bay	Dimension
❶	IDE CD-ROM drive bay	5.25 in x 1.60 in
❷	Available removable media drive bay	5.25 in x 1.60 in
❸	Available removable media drive bay	5.25 in x 1.60 in
❹	Available removable media drive bay	5.25 in x 1.60 in
❺	1.44-MB diskette drive bay	3.5 in x 1.0 in
❻	hard drive bay	3.5 in x 1.0 in
❼	hard drive bay	3.5 in x 1.0 in

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Installing a Hard Drive

To install a 3.5-inch hard drive:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the front bezel.

1. Follow the steps in "Removing the Access Panel" earlier in this chapter.
2. Disconnect the power and data cables from the back of all devices in the hard drive compartment.
3. Remove the three shipping screws ❶, press the tabs on each side of the drive compartment ❷, and then pull the drive compartment from the chassis ❸.

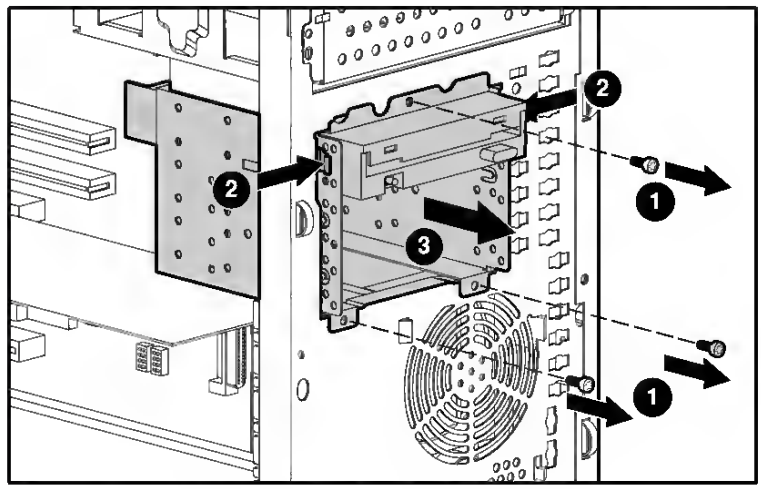

Figure 3-6. Removing the drive compartment

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4. Configure the device.
   - For the ProLiant ML330 server, set the SCSI ID on the drive. You must manually set the SCSI ID on each device to a unique value in the range of 0 to 6 for each SCSI bus. Refer to the documentation provided with the device for instructions on how to set the SCSI ID.
   - For the ProLiant ML330e server, make sure that the jumper on the drive is set to Cable Select so that the primary and secondary drives are determined by the cable. Refer to Chapter 4 "Cabling Guidelines" for more information.
5. If applicable, remove all terminating jumpers from third-party SCSI devices. (Compaq SCSI cables are terminated.)
6. Slide the drive into the drive bay ❶, and then secure with two screws on each side of the drive compartment ❷.

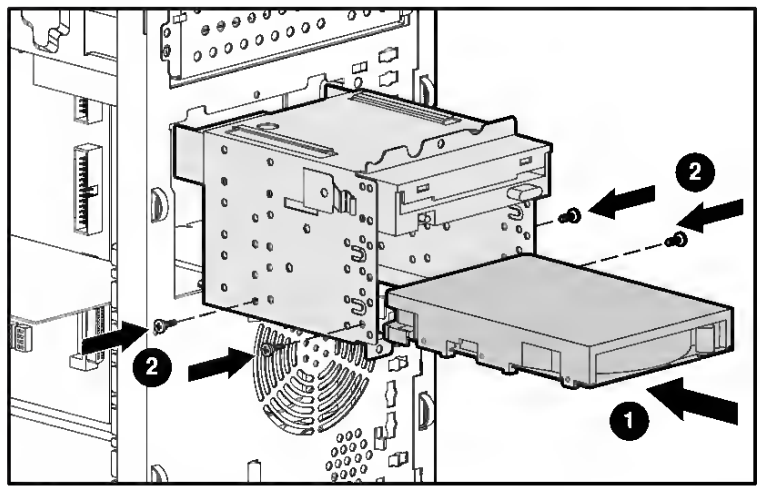

Figure 3-7. Installing a 3.5-inch hard drive

7. Slide the drive compartment back into the chassis.

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8. Connect the power and data cables to the back of all devices.

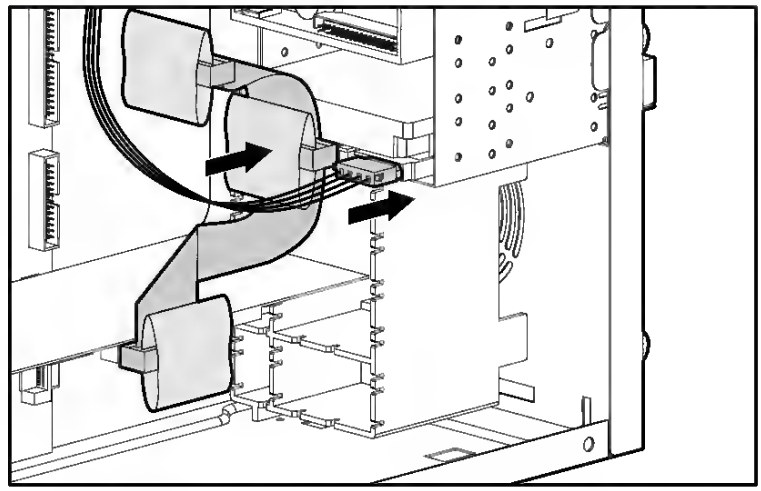

Figure 3-8. Connecting the hard drive cables (ProLiant ML330 server)

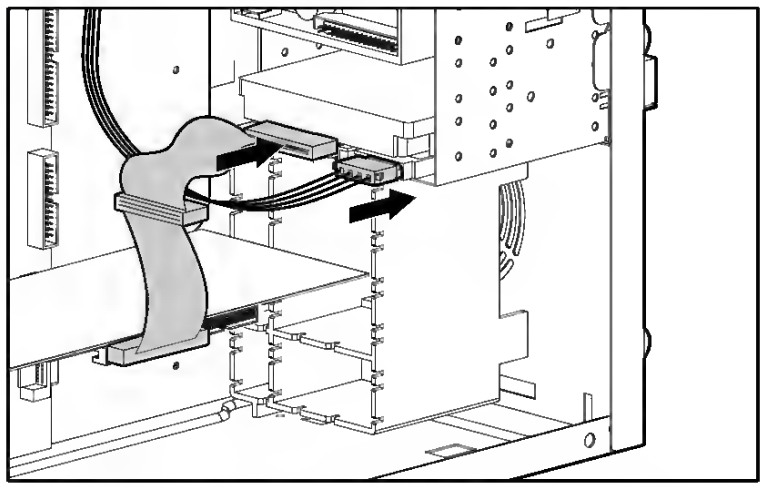

Figure 3-9. Connecting the hard drive cables (ProLiant ML330e server)

9. Replace the access panel and the front bezel.
10. Restore power to the server.

NOTE: Using a non-Ultra2 drive impacts the SCSI bus performance of the ProLiant ML330 server.

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Removing a Hard Drive

To remove a 3.5-inch hard drive:

CAUTION: To prevent damage to equipment or loss of information, power down the server, disconnect all cables from the back of the server, and disconnect the power cord before removing the access panel.

1. Follow the steps in "Removing the Access Panel" earlier in this chapter.
2. Disconnect the power and data cables from the back of all devices in the hard drive compartment.

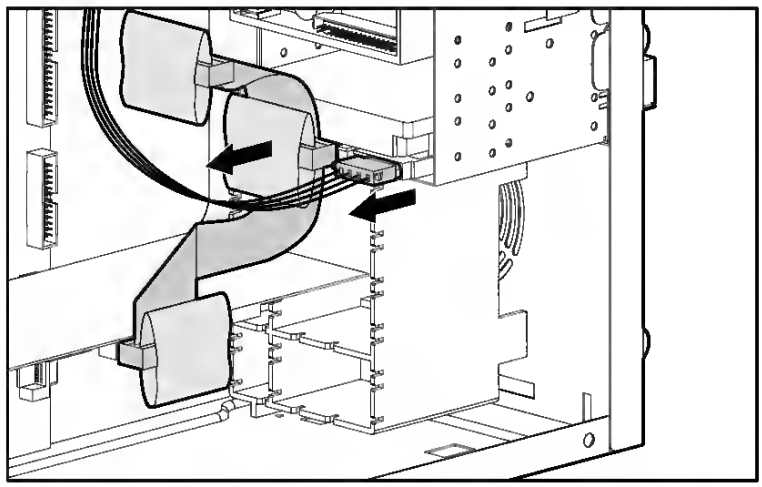

Figure 3-10. Disconnecting the hard drive cables (ProLiant ML330 server)

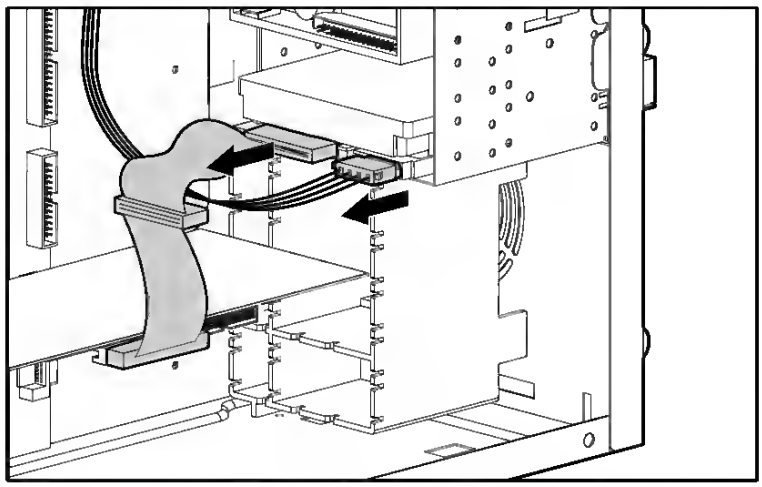

Figure 3-11. Disconnecting the hard drive cables (ProLiant ML330e server)

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3. Remove the three shipping screws, press the tabs on each side of the drive compartment, and then pull the drive compartment from the chassis as shown in Figure 3-6.

4. Remove two screws on each side of the drive to be removed ❶, and then gently pull the drive out of the drive bay ❷ as shown in Figure 3-12.

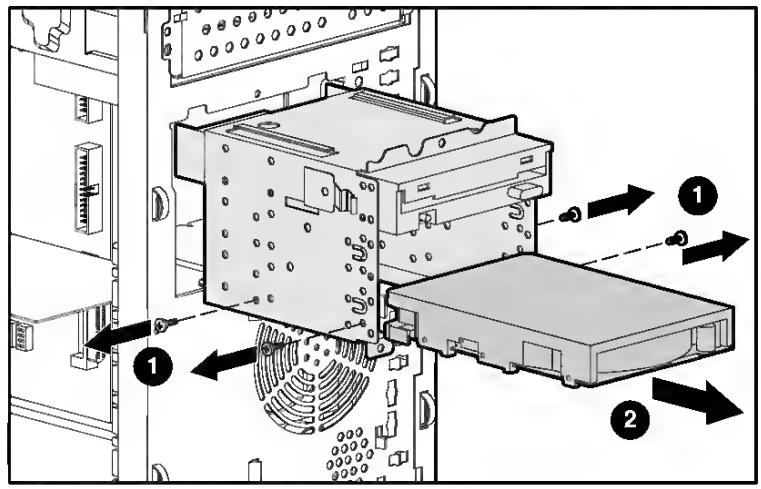

Figure 3-12. Removing a hard drive

5. Slide the drive compartment back into the chassis.

6. Connect the power and data cables to the back of all devices.

7. Replace the access panel and the front bezel.

8. Restore power to the server.

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Installing a Hard Drive into a Removable Media Bay

IMPORTANT: If you are installing a hard drive into a removable media drive bay, you must use a drive tray. This drive tray can be found in the removable media bay. See "Removing a Drive Tray" earlier in this chapter.

To install a hard drive using a drive tray:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

1. Follow the steps in "Removing the Access Panel" and "Removing a Drive Tray" earlier this chapter.
2. Set the drive into the drive tray ❶.
3. Tighten the screws on the bottom of the drive tray to secure the drive into the drive tray ❷.

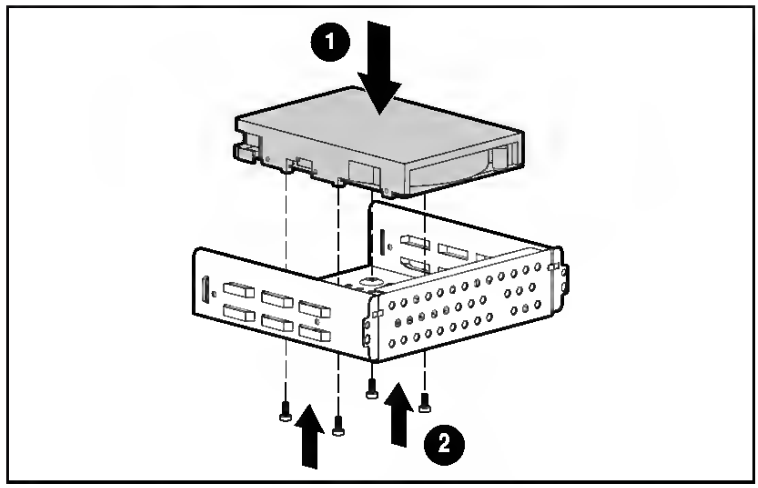

Figure 3-13. Installing a hard drive into removable media bay drive tray

4. Slide the drive tray into the removable media bay, and then secure with a screw on each side of the bezel blank.

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5. Connect the data and power cables to the back of all devices.

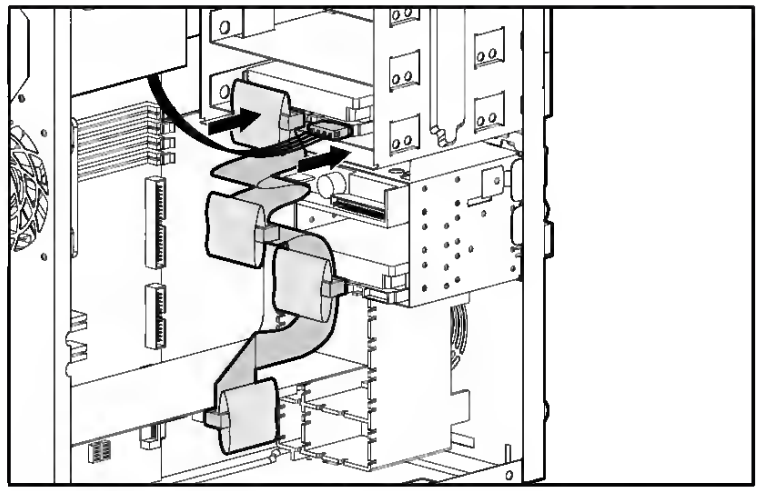

Figure 3-14. Connecting the drive cables (ProLiant ML330 server)

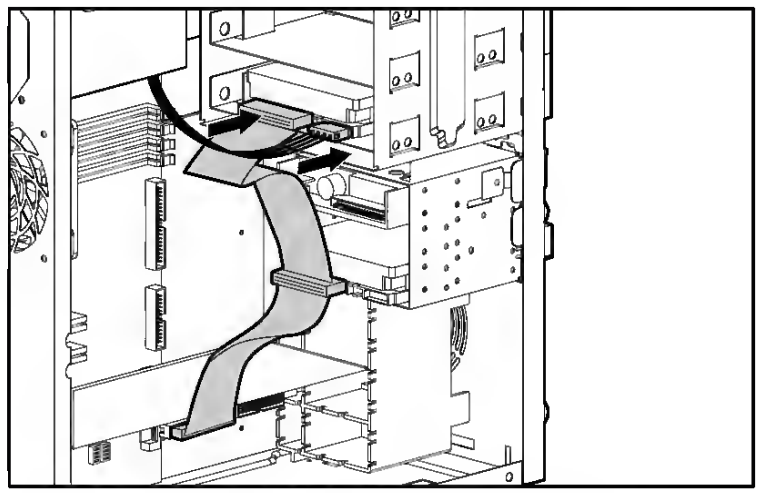

Figure 3-15. Connecting the drive cables (ProLiant ML330e server)

6. Replace the access panel and the front bezel.

7. Restore power to the server.

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Installing a Tape Drive or Other Device into a Removable Media Bay

IMPORTANT: The following section applies only to the ProLiant ML330 server or ProLiant ML330e server models with a SCSI option card installed.

All ProLiant ML330e/ML330 server models ship standard with four removable media bays. The top 5.25-inch bay is occupied with an IDE CD-ROM drive. The remaining three 5.25-inch bays are available for removable media devices. You can install three half-height devices, or one full-height device and one half-height device, into these bays.

To install a 5.25-inch device:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

IMPORTANT: When installing a removable media device, remove the rails included in the drive tray and install them on the device (replace any existing rails on the device). The rails are secured to the drive tray with two screws on each rail.

1. Follow the steps in "Removing the Access Panel" and "Removing the Bezel Blanks" at the beginning of this chapter.
2. Set the SCSI ID on the drive. You must manually set the SCSI ID on each device to a unique value in the range of 0 to 6 for each SCSI bus. Refer to the documentation provided with the device for instructions on how to set the SCSI ID.
3. Remove all terminating jumpers from third-party SCSI devices. (Compaq SCSI cables are terminated.)

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4. Slide the device into the drive bay ❶, and then secure with screws on each side of the device ❷ as shown in Figure 3-16.

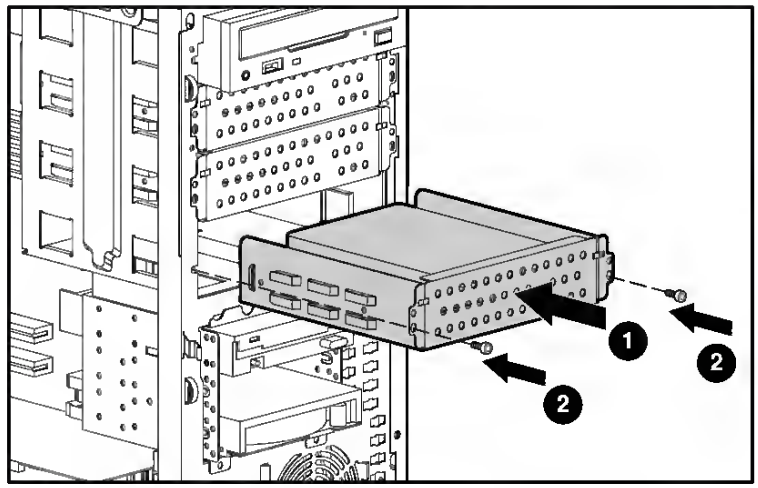

Figure 3-16. Installing a device into a 5.25-inch drive bay.

5. Connect the data and power cables to the back of the device, as shown in Figure 3-14.
6. Replace the access panel and the front bezel. Restore power to the server.

To install a tape drive:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

IMPORTANT: When installing a removable media device, remove the rails included in the drive tray and install them on the device (replace any existing rails on the device). The rails are secured to the drive tray with two screws on each rail.

1. Follow the steps in "Removing the Access Panel" and "Removing the Bezel Blanks" at the beginning of this chapter.
2. Set the SCSI ID on the drive. You must manually set the SCSI ID on each device to a unique value in the range of 0 to 6 for each SCSI bus. Refer to the documentation provided with the device for instructions on how to set the SCSI ID.

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3. Slide the drive into the drive bay, as shown in Figure 3-17.

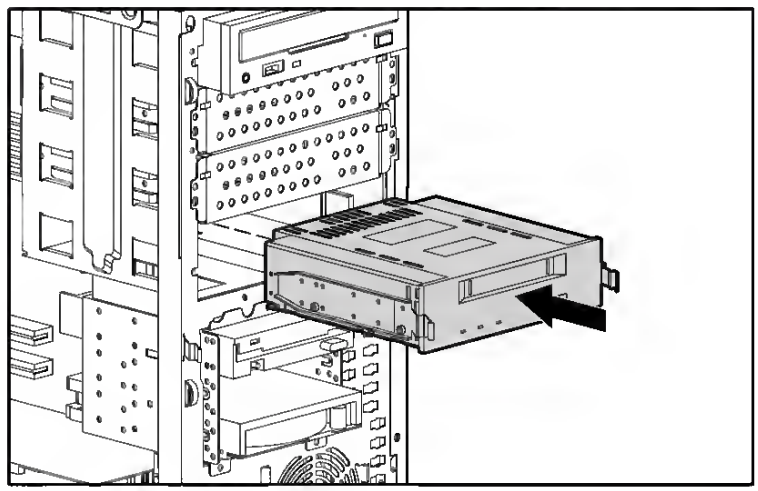

Figure 3-17. Installing a tape drive

4. Connect the data and power cables to the back of the drive, as shown in Figure 3-14.
5. Remove the two bezel blanks in the front bezel in front of the tape drive. See "Removing the Bezel Blanks" earlier in this chapter.
6. Replace the access panel and the front bezel.
7. Restore power to the server.

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Removing a Tape Drive or Other Device from a Removable Media Bay

IMPORTANT: The following section applies only to the ProLiant ML330 server or ProLiant ML330e server models with a SCSI option card.

To remove a tape drive or other device:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

1. Follow the steps in "Removing the Access Panel" at the beginning of this chapter.
2. Disconnect the power and data cables from the back of the device.

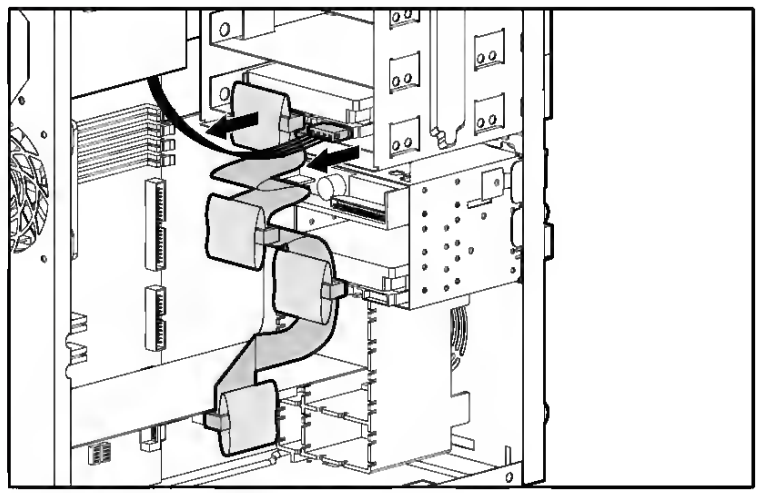

Figure 3-18. Disconnecting the SCSI cable

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3. Remove the screws on each side of the device ❶.
4. Gently slide the device out from the front of the chassis ❷.

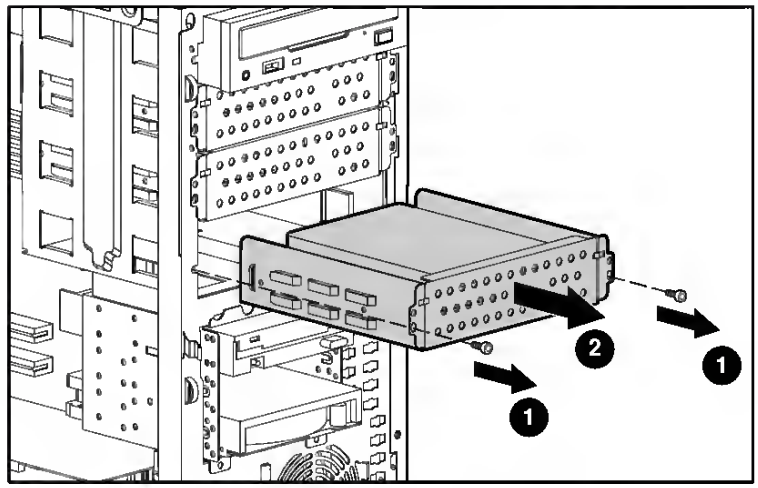

Figure 3-19. Removing a device from the removable media bay

5. Install another device or a drive tray. Replace the bezel blank (or blanks). See "Removing the Bezel Blanks" and "Removing a Drive Tray" earlier in this chapter.
6. Replace the access panel and the front bezel. Restore power to the server.

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Expansion Slots

Figure 3-20 and Table 3-2 identify the location of expansion slots.

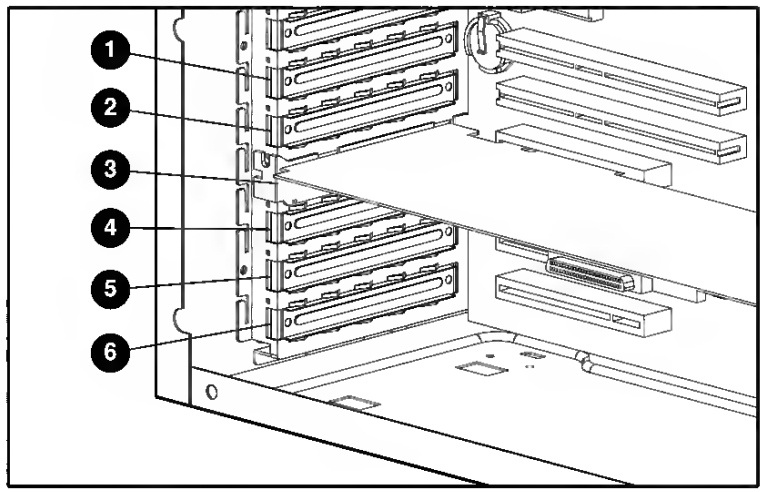

Figure 3-20. Locating expansion slots

Table 3-2
Expansion Slots

Item	Slot Type	Slot Number
❶	64-bit PCI (half-length)	1
❷	64-bit PCI	2
❸	32-bit PCI (Server Feature Board)	3
❹	32-bit PCI	4
❺	32-bit PCI	5
❻	32-bit PCI	6

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Installing an Expansion Board

To install an expansion board:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

CAUTION: To prevent damage to the system when handling components, see Appendix B, "Electrostatic Discharge."

1. Follow the steps in "Removing the Access Panel" earlier in this chapter.
2. From inside the chassis, push the expansion slot cover through the rear of the chassis.

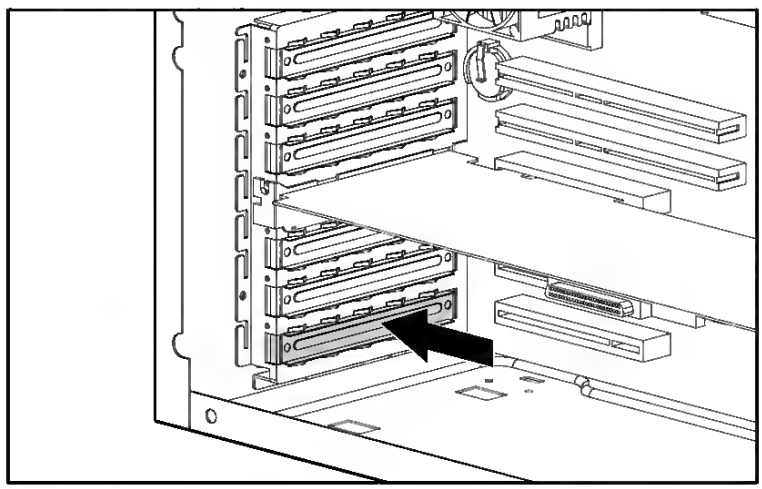

Figure 3-21. Removing expansion slot cover

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3. Insert the expansion board into the slot and secure with a screw on the top of the board.

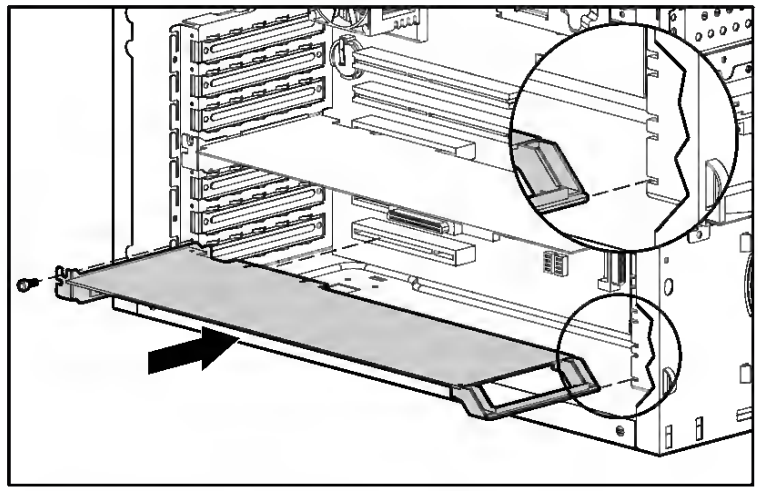

Figure 3-22. Installing an expansion board

4. Connect any cables to the expansion board.

To remove an expansion board, reverse steps 1 through 4.

Configuring PCI Devices

Interrupt sharing between PCI devices may occur in certain configurations. The system setup utility is designed to optimally configure the system. However, interrupt conflicts may occur between PCI devices. Refer to Chapter 5, "Server Configuration and Utilities," for more information on the setup utility used by your server.

NOTE: Interrupt sharing does not present a problem for like devices, such as two network interface controllers.

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Interrupt Settings

NOTE: You can reset interrupt settings at any time by running the setup utility, and choosing "Set Defaults and Exit."

The setup utility for your server allows you to view and change the interrupts assigned to each device. However, you may notice that changing the interrupt of one device changes another device interrupt. For information on the setup utility used by your server, refer to Chapter 5, "Server Configuration and Utilities."

Memory Modules

Technical Information and Important Guidelines for DIMM Installation

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

CAUTION: To prevent damage to the system when handling components, see Appendix B, "Electrostatic Discharge."

CAUTION: When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

When installing DIMMs, you must follow these guidelines:

- Use only 64-MB, 128-MB, 256-MB, or 512-MB Registered PC133-MHz ECC SDRAM DIMMs.
- DIMMs must be industry-standard, 168-pin, PC133-MHz Registered SDRAM DIMMs. The SDRAM DIMMs must support CAS Latency 3 (CL=3).
- Do not mix ECC and non-ECC SDRAM DIMMs. If different types of DIMMs are mixed, the system does not function properly.

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Installing a Memory Module

The ProLiant ML330e/ML330 server supports PC133-MHz Registered ECC SDRAM DIMMs. Additional DIMMs (64-MB, 128-MB, 256-MB, or 512-MB) are available to upgrade the memory. The server has four DIMM sockets located on the system board.

It is not necessary to install DIMMs in pairs, and they can be installed into any available socket.

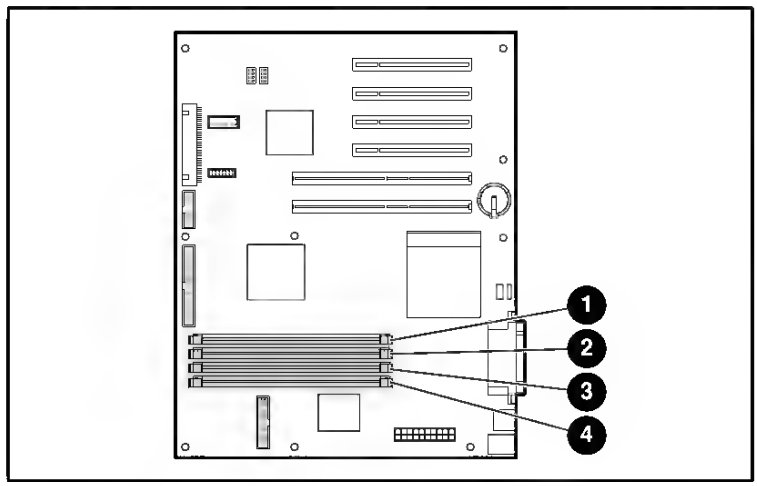

Figure 3-23. Locating DIMM sockets

Table 3-3
DIMM Sockets

Item	Component	Item	Component
❶	DIMM socket 1	❸	DIMM socket 3
❷	DIMM socket 2	❹	DIMM socket 4

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To install a DIMM:

1. Follow the steps in "Removing the Access Panel" at the beginning of this chapter.
2. Press outward on both latches of the DIMM socket at the same time ❶.
3. Insert the DIMM into the socket ❷.

CAUTION: A DIMM can be installed only one way or damage will result. Be sure to match the two key slots on the DIMM with the tab on the DIMM socket. Push the DIMM down into the DIMM socket, ensuring that it is fully inserted and properly seated.

4. Return latches to the upright position ❸.

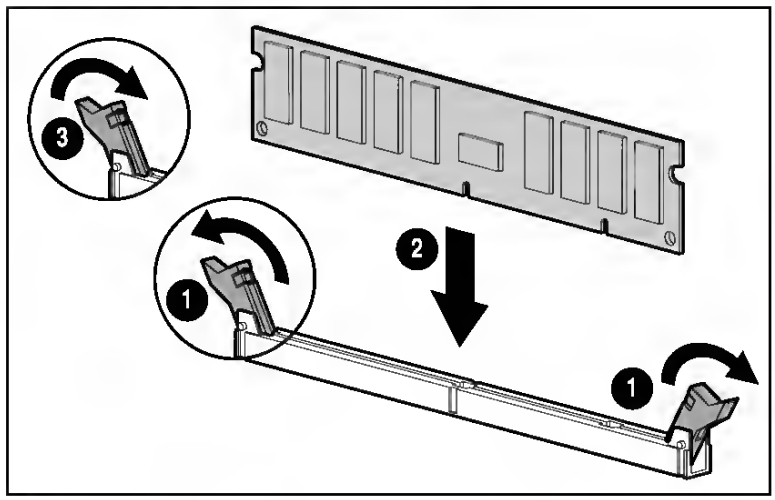

Figure 3-24. Installing a DIMM

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Removing a Memory Module

To remove a DIMM:

1. Follow the steps in "Removing the Access Panel" at the beginning of this chapter.
2. Press outward on both latches of the DIMM socket at the same time ❶. This releases the DIMM and pushes it partially out of the socket.
3. Lift the DIMM from the socket ❷.

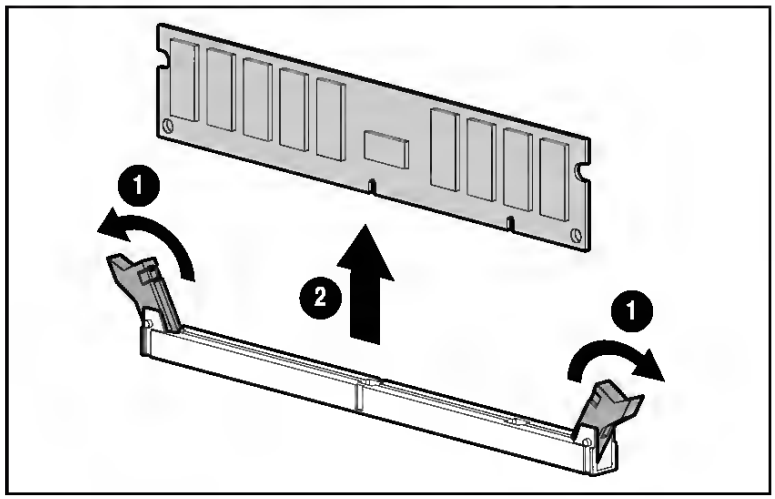

Figure 3-25. Removing a DIMM

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Replacing the Battery

The ProLiant ML330e/ML330 server has nonvolatile memory, which requires a battery to retain system information. There is a battery on the system board and a battery on the Server Feature Board. These batteries are required to maintain certain system data.

IMPORTANT: Refer to Regulatory Compliance Notices in Appendix A for battery disposal information.

Replacing the System Board Battery

If your server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. When replacing a battery, use a CR2032 3-volt lithium coin cell battery.

After you have completed the battery installation, reconfigure your system by running BIOS Setup utility (**F10**) for the ProLiant ML330 server or RBSU (**F9**) for the ProLiant ML330e server. See Chapter 5 for more information on these setup utilities.

WARNING: The system board contains a lithium battery. There is a risk of fire and chemical burn if the battery is handled improperly. Do not disassemble, crush, puncture, short external contacts, dispose of in water or fire, or expose the battery to temperatures higher than 60°C (140°F).

To replace the lithium battery:

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

CAUTION: Static electricity can damage electronic components of the server. Before beginning these procedures, be sure that you are discharged of static electricity by briefly touching a grounded metal object.

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1. Follow the steps in "Removing the Access Panel" at the beginning of this chapter.
2. Locate the battery on the system board. See Figure 3-26 for the location of the battery.

   NOTE: If you have expansion boards installed, it may be necessary to remove them in order to gain access to the battery.

3. Slide the battery out of the holder ❶. Lift the battery away from the holder ❷.

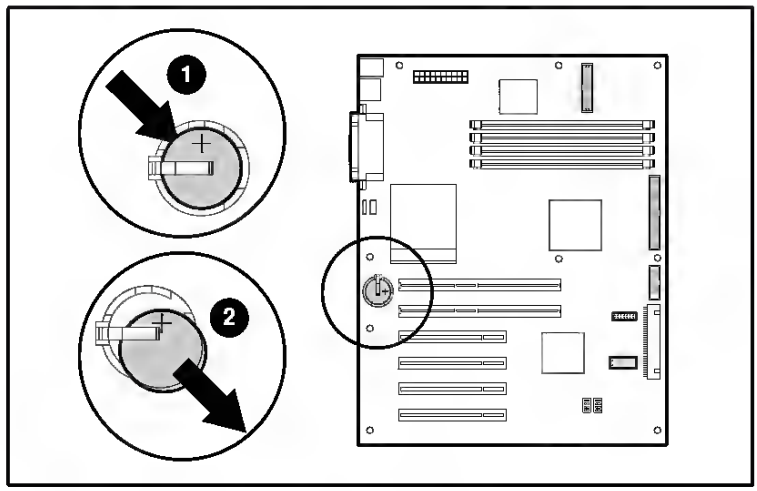

Figure 3-26. Removing the battery from the system board

4. Slide the replacement battery into the proper position with the positive (+) side up.

   IMPORTANT: Positive polarity should be positioned up.

5. Reconfigure your system by running BIOS Setup utility (**F10**) for the ProLiant ML330 server or RBSU (**F9**) for the ProLiant ML330e server. See Chapter 5 for more information on these setup utilities.

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Replacing the Server Feature Board Battery

WARNING: The Server Feature Board contains a lithium battery. There is a risk of fire and chemical burn if the battery is handled improperly. Do not disassemble, crush, puncture, short external contacts, dispose of in water or fire, or expose the battery to temperatures higher than 60°C (140°F).

CAUTION: To prevent damage to equipment or loss of information, make sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before removing the access panel.

CAUTION: Static electricity can damage electronic components of the server. Before beginning these procedures, be sure that you are discharged of static electricity by briefly touching a grounded metal object.

To install the new battery:

1. Follow the steps in "Removing the Access Panel" at the beginning of the chapter.
2. Remove the Server Feature Board from expansion slot 3. See "Expansion Slots" earlier in this chapter.
3. Slide the battery out of the holder, and then lift the battery away from the holder.
4. Slide the replacement battery into the proper position with the positive (+) side up.

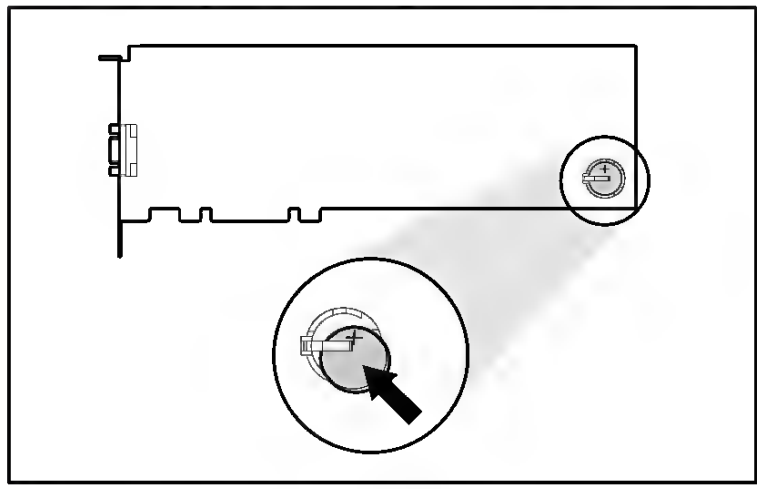

Figure 3-27. Replacing the Server Feature Board battery

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5. Replace the Server Feature Board in expansion slot 3.

   See "Installing an Expansion Board" earlier in this chapter for detailed instructions.

6. Replace the server access panel and connect cables to the server.

7. Reconfigure your system by running BIOS Setup utility (**F10**) for the ProLiant ML330 server or RBSU (**F9**) for the ProLiant ML330e server. See Chapter 5 for more information on these setup utilities.

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Chapter 4

Cabling Guidelines

Storage Device Installation Guidelines

This chapter provides an overview of the cabling that resides in the system chassis of a Compaq ProLiant ML330e/ML330 server. This chapter also includes information on how to cable SCSI, ATA, and removable media devices in the system, as well as information about all critical system cabling.

SCSI Cabling (for the ProLiant ML330 Server)

Consider the following guidelines when adding SCSI devices to your ProLiant ML330 server:

NOTE: For ProLiant ML330e server cabling information, refer to the section "ATA/100 Cabling" later in this chapter.

- As a general rule, a maximum of seven devices may be added per channel. Your server is equipped with one Wide Ultra2 SCSI channel.
- Be sure to remove all terminating jumpers from third-party SCSI devices.

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Identifying the Internal SCSI Components

Before cabling the server, note the removable media and hard drive compartment locations as shown in Figure 4-1 and Table 4-1. For additional information about installing optional SCSI devices, refer to the documentation included with the SCSI devices.

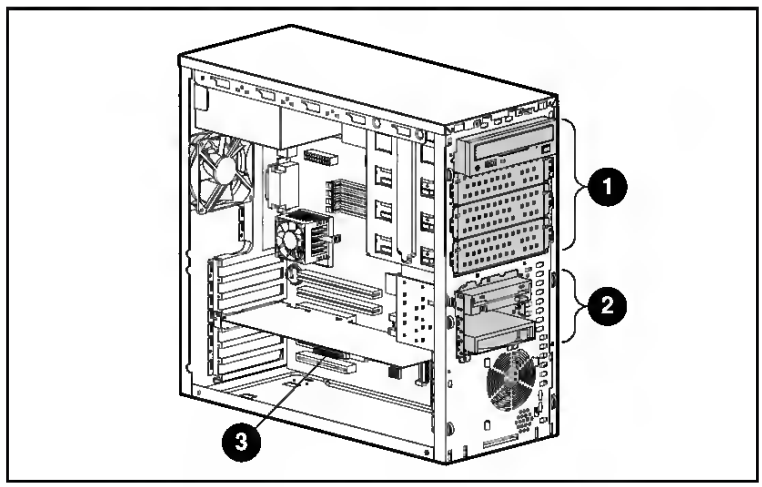

Figure 4-1. Internal SCSI components

Table 4-1
Internal SCSI Components

Number	Description
❶	Removable media bay area
❷	Hard drive bay area
❸	SCSI connector

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The SCSI cable shown in Figure 4-2 is included with the ProLiant ML330 server.

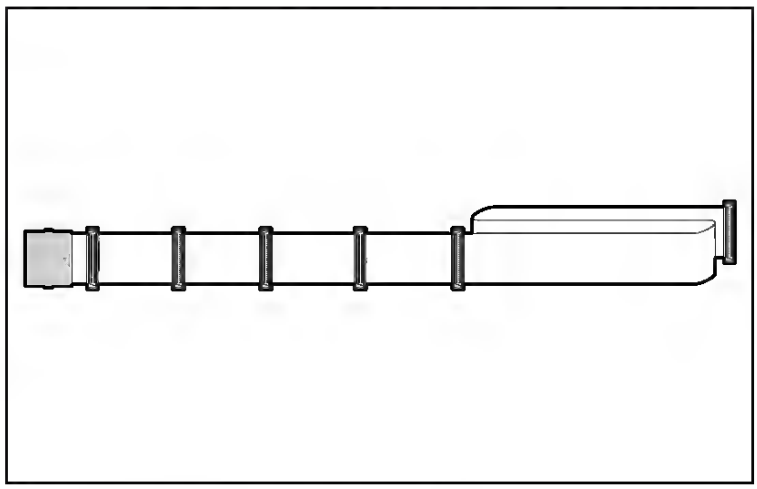

Figure 4-2. Identifying the SCSI cable with terminator

The SCSI cable shown in this illustration supports up to five SCSI devices and comes with a terminator on the end.

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Identifying and Connecting a Fast SCSI-2 Device (Narrow)

Some SCSI devices require a special adapter, which is not standard with your server, to connect with the SCSI cable included with your server.

If you are installing a device that uses a Fast SCSI-2 interface, you must use a 68-to-50 pin SCSI adapter (Part Number 199618-001), shown in Figure 4-3. This adapter should be installed between the 50-pin interface on the device and the 68-pin SCSI cable connected to the SCSI connector on the Server Feature Board.

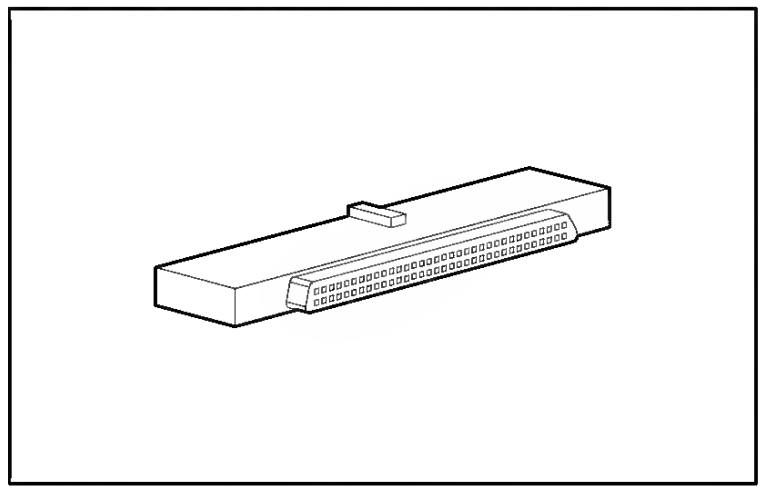

Figure 4-3. 68-to-50 pin (wide-to-narrow) SCSI adapter

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Connecting an Integrated Wide Ultra2 SCSI Controller to an Internal SCSI Hard Drive or Other SCSI Device

The following steps detail the procedure for connecting cables from an integrated Wide Ultra2 SCSI controller to an internal SCSI hard drive or other device:

1. Follow the steps in the sections following "Installing a Hard Drive" or "Installing a Tape Drive or Other Device into a Removable Media Bay" in Chapter 3.
2. Make sure the SCSI ID is uniquely set for each device.
3. Locate the Wide Ultra2 SCSI cable connected to the SCSI connector.
4. Install the next available connector to the hard drive or SCSI device.
5. Install the next available power connector to the hard drive or SCSI device.

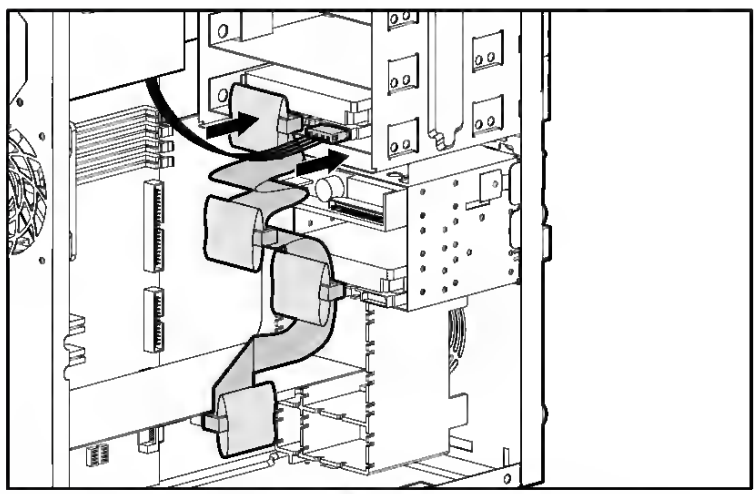

Figure 4-4. Cabling an integrated Wide Ultra2 SCSI controller to a hard drive or other device

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Connecting Internal Hard Drives to Smart Array Controllers

Many configurations are possible when multiple SCSI controllers are added. This section outlines the cabling procedure for the Smart Array Controller. Refer to the Smart Array Controller options documentation for further information.

The following steps outline the installation procedure for the Smart Array Controller:

1. Follow the steps in the sections following "Installing a Hard Drive" in Chapter 3.
2. Locate the Wide Ultra2 SCSI cable connected to the Server Feature Board SCSI connector.
3. Remove the cable from the SCSI connector.

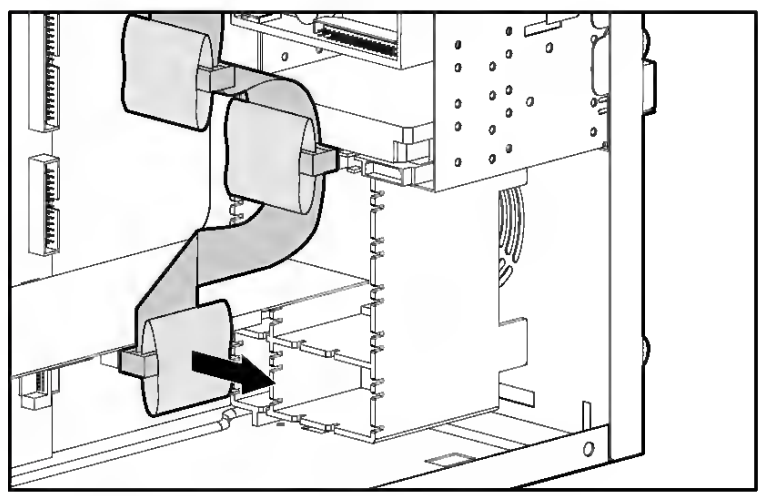

Figure 4-5. Removing the Wide Ultra2 SCSI cable from the Server Feature Board

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4. Reconnect the Wide Ultra2 SCSI cable to the Smart Array Controller.

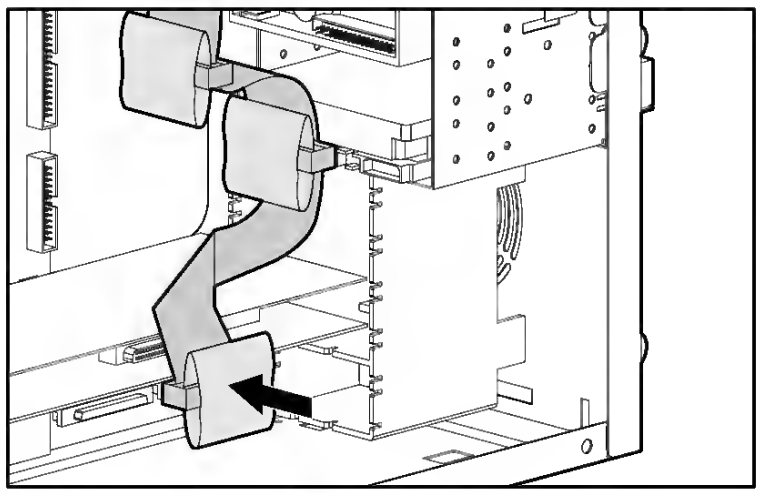

Figure 4-6. Connecting the Wide Ultra2 SCSI cable to the Smart Array Controller

NOTE: The SCSI connector on the Server Feature Board is self-terminating. If you choose not to use the SCSI connector, you do not need to install a terminated cable.

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ATA/100 Cabling (for the ProLiant ML330e Server)

Identifying the Internal ATA Components

Before cabling the server, note the removable media and hard drive compartment locations as shown in Figure 4-7 and Table 4-2.

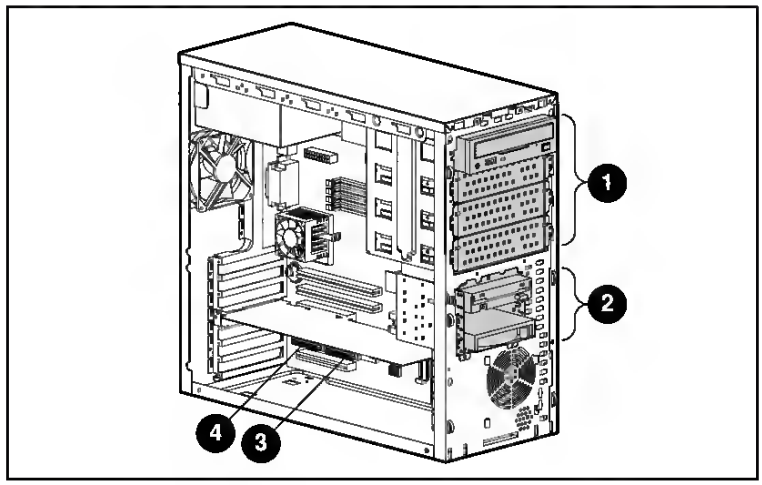

Figure 4-7. Internal ATA components

Table 4-2
Internal ATA Components

Number	Description
❶	Removable media bay area
❷	Hard drive bay area
❸	ATA connector (secondary)
❹	ATA connector (primary)

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The ATA cable shown in Figure 4-8 is included with the ProLiant ML330e server.

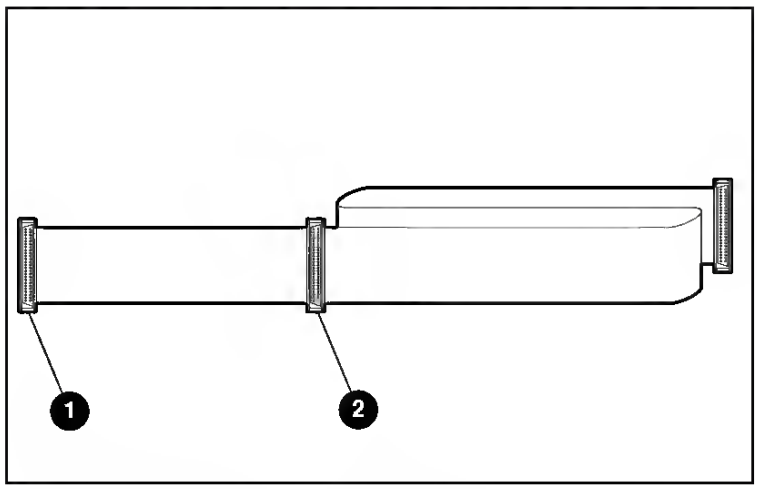

Figure 4-8. Identifying the ATA cable components

❶ Connector for device 0 (primary drive)

❷ Connector for device 1 (secondary drive)

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Connecting an Integrated ATA/100 Controller to an Internal ATA Hard Drive or Other Device

The following steps detail the procedure for connecting cables from an integrated ATA/100 controller to an internal ATA hard drive or other device:

1. Follow the steps in the sections following "Installing a Hard Drive" or "Installing a Tape Drive or Other Device into a Removable Media Bay" in Chapter 3.
2. Make sure that the jumper on the drive is set to Cable Select.
3. Locate the ATA cable connected to the primary ATA connector on the Server Feature Board. If both connectors 0 and 1 of the primary ATA cable are already connected to installed devices, locate the secondary ATA cable. The secondary ATA cable is connected to the secondary ATA connector on the Server Feature Board.
4. Install cable connector 0 of the cable to the hard drive or ATA device. If cable connector 0 is already connected to an installed device, use cable connector 1.

IMPORTANT: Make sure that all devices are connected to the ATA cables in the following order: primary cable connector 0, primary cable connector 1, secondary cable connector 0, secondary cable connector 1.

5. Install the next available power connector to the hard drive or ATA device.

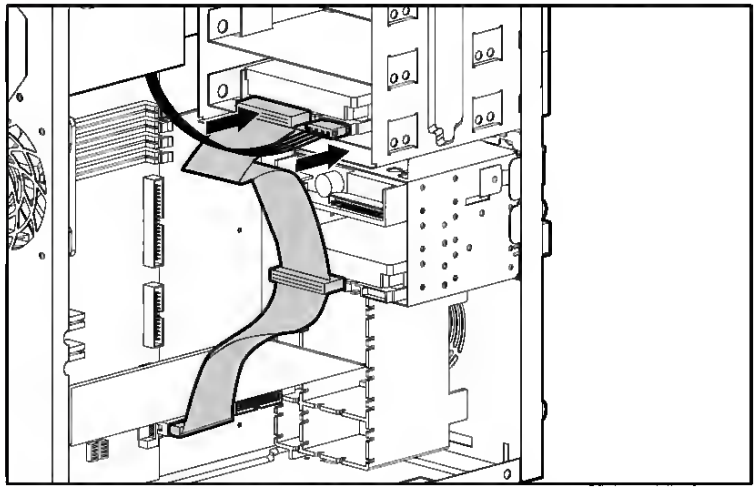

Figure 4-9. Cabling an integrated ATA/100 controller to a hard drive or other device

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Connecting the Server Management Information Cable (SMIC)

The Server Management Information Cable (SMIC) provides system-critical management information to the operating system. Proper SMIC connections help avoid potential system failure and BIOS error messages. Figure 4-10 and Figure 4-11 illustrate the proper SMIC connection between the system board and the Server Feature Board.

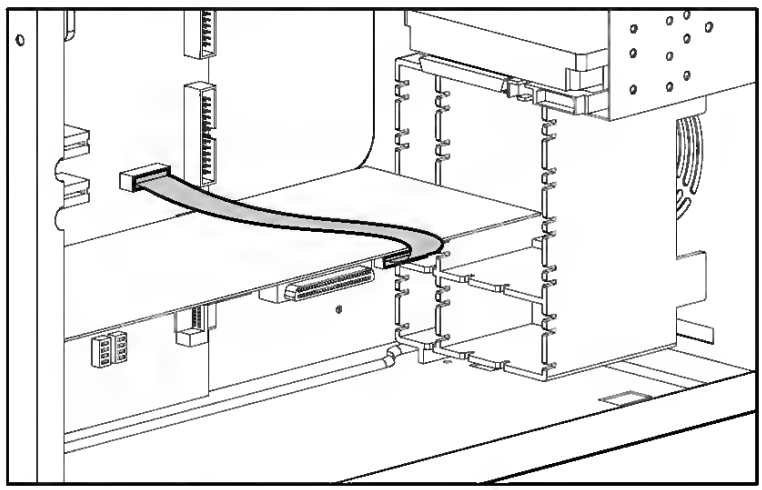

Figure 4-10. Connecting the Server Management Information Cable (ProLiant ML330 server)

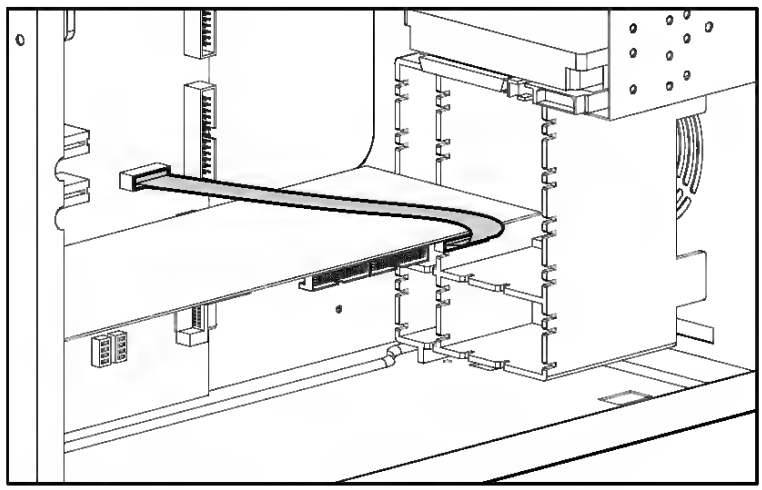

Figure 4-11. Connecting the Server Management Information Cable (ProLiant ML330e server)

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Chapter 5

Server Configuration and Utilities

This chapter provides information about the utilities and tools provided with the Compaq ProLiant ML330e/ML330 server. The following tools and utilities are described in this chapter:

- BIOS Setup Utility for ProLiant ML330 Servers
- ROM Based Setup Utility (RBSU) for ProLiant ML330e Servers
- ROMPaq
- SmartStart
- Compaq Insight Manager
- SmartStart Diskette Builder
- Compaq Survey Utility
- Compaq Diagnostics Utility
- Automatic Server Recovery (ASR)

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BIOS Setup Utility for ProLiant ML330 Servers

The BIOS Setup utility performs a wide range of configuration activities including the following:

- Viewing system information
- Selecting the operating system
- Configuring system devices and installed options
- Selecting the primary boot controller
- Managing storage options
- Backing up and restoring saved configurations

In addition, the BIOS Setup utility includes other features, which are outlined in "Using the BIOS Setup Utility," later in this chapter.

Navigating the BIOS Setup Utility

To make selections within the BIOS Setup utility, use the following keys:

- To access the BIOS Setup utility, press **F10** during powerup when prompted in the lower right corner of the screen.
- The **Arrow** keys navigate through the menu system.
- The **Tab** key navigates through individual fields on the screen.
- Selections are made by pressing the **Enter** key.
- Selections are cancelled by pressing the **Escape** key.
- Selections and changes are saved by pressing the **F10** key

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Using the BIOS Setup Utility

NOTE: Most of the features in the BIOS Setup utility are not required in the setup of your server. The options in this utility are designed to assist with specific server configuration issues.

The BIOS Setup utility is separated into a series of menu selections designed to configure specific areas of the system. The primary menus are the File, System, Storage, and Advanced menus.

The File Menu

The File menu is used for saving and restoring configurations, and exiting the utility. The following is a list of selections found in this menu with an explanation of each option:

Save to Floppy creates a backup image of the current system configuration on an unformatted 1.44-MB diskette in the diskette drive. This process is set up to archive current configuration settings and to overwrite any data previously saved on the diskette.

CAUTION: All data on the diskette is overwritten during this process.

Restore from Floppy reads a backup image of the current system configuration from a 1.44-MB diskette in the diskette drive and stores the configuration in the system. This option can be used to restore the system to an archived configuration.

Set Defaults and Exit restores default configuration values for the system. This option can be used if the system has been incorrectly configured.

Ignore Changes and Exit terminates the setup utility without storing any changes that have been made during the current BIOS setup session.

Save Changes and Exit stores the current configuration selections.

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The System Menu

The System menu is used for overall system configuration settings. The following is a list of selections found in this menu with an explanation of each option:

System Information displays the current system configuration. This information can be used to identify current system components without the chassis being opened. Items displayed include:

- Product name
- System type
- Processor information
- Cache size
- System BIOS information
- System management information, including serial number and asset tracking information
- Memory and memory module information

Set Time and Date allows the user to set the system time and date.

Primary Operating System allows the selection of the operating system. This option automatically selects appropriate advanced settings for the operating system selected and must be set before the operating system installation.

Setup Password prevents unauthorized users from running the BIOS Setup utility.

Power-on Password prevents the system from starting unless the specified password has been entered.

System IDs allows the user to alter management information settings. This management information is used by the administrator for tracking the system and includes the factory-programmed system serial number, user-assigned asset and ownership tags, and a factory-assigned universally unique system identifier (UUID) used by software.

Keyboard allows the user to select an international keyboard used with the system.

Processor Serial Number enables or disables the unique processor serial number feature of Intel Pentium III processors.

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The Storage Menu

The Storage menu is used to configure primary storage devices connected to the system. The following is a list of selections found in this menu with an explanation of each option:

Diskette Drives allows the selection of the type of diskette drive connected to the diskette drive controller in the system.

Boot Order enables the user to configure the order of devices used to start an operating system. This option can be used to prevent the system from starting from diskette and CD and to select which device the system scans first.

Hard Drive Controller Order allows manual selection of the controller. When the system displays the "attempting to Boot from C:" message, the system searches the selected controller for an operating system. Whenever an additional storage adapter is added to the system, it is recommended that you use this selection to confirm that you are starting from the appropriate hard drive controller.

Advanced allows the user to configure and control removable media, as well as to control the use of the IDE controllers in the system devices. The following is a list of selections found in this menu:

- **Removable Media** allows you to select settings for removable media devices.
- **IDE Devices** allows you to observe devices connected to the primary and secondary IDE controllers in the system.
- **IDE Drive Timing** allows changes to the mechanism used for transferring data between various IDE devices connected to the system.
- **IDE Options** allows users to select whether IDE translations are enabled.

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The Advanced Menu

The Advanced menu is used to manually assign system resource assignments and disable some devices in the system to free resources for other devices in the system. The following is a list of selections found in this menu with an explanation of each option:

Power-On Self-Test (POST) allows you to set Quick Boot and POST messages. Quick Boot is a feature that speeds the POST processes after the system has been started correctly one time. POST messages can be disabled to cancel text displayed during the POST process.

Embedded Devices allows you to view and manually assign resources to embedded system devices, as well as to disable some embedded devices to free system resources. Disable and enable the primary and secondary IDE controller.

IMPORTANT: Compaq recommends that you do not disable the embedded SCSI controller. Doing so disables certain system management features.

PCI IRQ Configuration allows a manual interrupt request (IRQ) for a specific PCI device. The system automatically assigns IRQ settings for all PCI devices in the system.

Follow these guidelines when manually assigning IRQ for PCI devices in the system:

- If sharing is required, share interrupts between similar devices. It is generally safe to share IRQs between PCI devices. However, for certain operating systems, it is best to prevent dissimilar PCI devices (for instance, a storage controller and a network controller) from sharing the same IRQ.
- Use all available IRQs. Sharing IRQs can cause performance bottlenecks. To prevent these bottlenecks, assign PCI devices to unused IRQs, following the rules already listed.

NOTE: The latest operating systems from Microsoft, Novell, and SCO bypass the use of IRQs and use an advanced programmable interrupt controller (APIC). The APIC has been designed to address the issues associated with limited IRQs, multiprocessor systems, and shared interrupts. If you are using the latest operating system, you can let the system automatically configure interrupts for all devices in the system.

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IRQ Summary displays the list of all interrupts (IRQs) in the system, as well as the devices using the IRQs.

APIC Table allows users to manually assign the table that is generated for the operating system. By default, this selection is automatically set based upon the primary operating system. In the event that you have selected "Other" as the primary operating system, this menu allows manual override.

The mapped table is a configuration that represents the legacy IRQ assignments for all devices in the system. The full table is a configuration that represents the broadest interrupt assignments for devices in the system, minimizing interrupt sharing at the possible expense of compatibility with older operating systems.

Automatic Server Recovery enables and disables the ASR feature.

Wake Support enables and disables the wake support (PME), sucb as Wake on LAN.

Network Server Mode (NSM) enables and disables the ability to start the system without a keyboard. When enabled, this option can be used to lock out the keyboard until the power-on password is successfully entered. The default setting for NSM is disabled.

F1 Prompt enables and disables the F1 prompt option. When enabled, the system ROM halts the system at the F1 prompt and alerts the user of an error condition or system configuration change. The default setting for the F1 prompt is enabled.

Intruder Alert enables and disables the intruder alert option. When enabled, an intruder alert message is displayed if the front bezel has been unlatched or removed. The default setting is disabled.

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ROM Based Setup Utility (RBSU) for ProLiant ML330e Servers

RBSU performs a wide range of configuration activities including the following:

- Configuring system devices and installed options
- Viewing system information
- Selecting the operating system
- Selecting the primary boot controller
- Managing storage options

In addition, RBSU includes other features, which are outlined in "Using the ROM Based Setup Utility (RBSU)" later in this chapter.

Navigating the ROM Based Setup Utility (RBSU)

To make selections within RBSU, use the following keys:

- To access RBSU, press **F9** during powerup when prompted in the lower right corner of the screen.
- The **Arrow** keys navigate through the menu system.
- Selections are made by pressing **Enter.**
- Selections are cancelled by pressing the **Escape** key.
- Selections and changes are saved by pressing **F10.**

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Using the ROM Based Setup Utility (RBSU)

NOTE: Most of the features in RBSU are not required in the setup of your server. The options in this utility are designed to assist with specific server configuration issues.

RBSU is separated into a series of menu selections designed to configure specific areas of the system. The primary menus are as follows:

- System Options
- PCI Devices
- Boot Controller Order
- Date and Time
- System Passwords
- System Identification
- Advanced Options
- Utility Language

System Options

The System Options menu is used for overall system configuration settings. The following is a list of selections found in this menu with an explanation of each option:

OS Selection allows the selection of the operating system. This option automatically selects appropriate advanced settings for the operating system selected and should be set before the operating system installation.

Embedded COM Port A allows the user to enable the embedded COM Port A at the specified resource settings or disable the option.

Embedded COM Port B allows the user to enable the embedded COM Port B at the specified resource settings or disable the option.

Embedded LPT Port allows the user to enable the embedded LPT Port at the specified resource settings or disable the option.

Standard Boot Order allows the user to configure the order of devices used to start an operating system. This feature is used to prevent the system from starting from diskette and CD, and to select which device the system scans first.

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Diskette Write Control allows the user to configure the write control of the removable media drive. It can be set to read and write or to read only.

Diskette Boot Control allows the user to have the system boot for the removable media device.

PCI Devices

The PCI Devices menu option is used to view and assign the IRQs for all PCI devices.

Boot Controller Order

The Boot Controller Order menu option is used to view and assign the current controller order.

Date and Time

The Date and Time menu option is used to set the system date and time.

System Passwords

The System Passwords menu is used to set up passwords to limit access to the system and its setup options. The following is a list of selections found in this menu with an explanation of each option:

Setup Password allows a setup password to be set. This password is used to keep unauthorized users from modifying the setup options.

Power-On Password allows a power-on password to be set. This password is used to keep unauthorized users from powering up the system.

Network Server Mode (NSM) allows the user to disable or enable the ability to start the system with a locked keyboard or without a keyboard. The keyboard is unlocked by entering the Power-On Password.

System Identification

The System Identification menu is used to identify the system.

Asset Tag allows the user to identify the system with an Asset Tracking Number.

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Advanced Options

The Advanced Options menu is used to configure advanced options of the system. The following is a list of selections found in this menu with an explanation of each option:

MPS Table Mode allows the user to change the APIC table setting. This selection should be automatically set by OS Selection, but it allows the user to override the automatic selection.

POST Speed Up allows the user to enable or disable the quick or slow start process. The slow start process performs a complete memory test.

Automatic Server Recovery (ASR) allows the user to enable or disable the Automatic Server Recovery option.

Wake Support (PME) allows the user to enable or disable Wake Support (PME).

Floppy Controller allows the user to enable or disable the disk controller.

Primary IDE Controller allows the user to enable or disable the primary IDE controller.

Secondary IDE Controller allows the user to enable or disable the secondary IDE controller.

Processor Serial Number allows the user to enable or disable the ability of applications to read the processor serial number.

Thermal Shutdown allows the user to disable or enable the ability of the system to shut down due to a thermal caution event. The default for this option is enabled. Compaq does not recommend disabling this feature.

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Preboot Execution Environment (PXE) Options allows the user to download operating system configurations from the network via the NIC connector.

- **Embedded PXE Support** enables or disables the user's ability to remote boot from the network via the NIC connector. The default for this option is disabled.
- **User Interface** enables or disables the ability to perform an unattended network boot via the NIC connector. The default for this option is enabled.

Set Defaults and Exit allows the user to reset the configuration settings to their factory defaults.

Utility Language

The Utility Language is used to set the language in which RBSU is displayed. The user has the following choices:

- English
- Spanish
- German
- French
- Italian
- Japanese

ROMPaq

Using Flash ROM in Compaq servers allows the firmware (BIOS) to be upgraded with system or option ROMPaq utilities. To upgrade the BIOS, insert a ROMPaq diskette into the diskette drive, remove power from the system, and then power up the system again.

The ROMPaq utility then checks the system and provides a choice (if more than one exists) of ROM revisions to which the system can be upgraded. This procedure is the same for both system and option ROMPaq utilities.

CAUTION: Do not power down during a firmware upgrade. A loss of power during upgrade may corrupt the firmware and prevent the system from starting.

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SmartStart

The SmartStart and Support Software CD is used to load the system software, thereby achieving a well-integrated server and ensuring maximum dependability and supportability. The SmartStart and Support Software CD contains diagnostic utilities and ROMPaq tools.

NOTE: Do not use the SmartStart and Support Software CD for loading system software if you purchased your system with a factory-installed operating system. Refer to the *Compaq Factory-Installed Operating System Software User Guide.*

To install the SmartStart and Support Software CD, run **F10** setup (BIOS Setup utility) for the ProLiant ML330 server, or **F9** setup (RBSU) for the ProLiant ML330e server, and configure the primary operating system. Next, follow these steps:

1. With your server powered up, press the disk eject button to open the CD-ROM tray.
2. Locate the SmartStart and Support Software CD in the Server Setup and Management pack.
3. Insert the SmartStart and Support Software CD into the CD-ROM drive, and then restart the system.

   NOTE: Handle the CD by its edges, not by the flat surfaces of the disc.

4. When the busy indicator turns green, the SmartStart installation sequence begins.

   Refer to the SmartStart documentation included with your server to install the operating system, create updated driver diskettes, and run upgrade utilities.

Compaq Insight Manager

Compaq Insight Manager is the Compaq application for easily managing network devices. Compaq Insight Manager delivers intelligent monitoring and alerting as well as visual control of your Compaq devices. Documentation for Compaq Insight Manager is available on the Compaq Management CD in [CD-ROM DRIVE]:*OVERVIEW.HLP*.

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SmartStart Diskette Builder

The SmartStart and Support Software CD contains a utility to generate support diskettes in the event that they are needed or the software cannot be used directly from the SmartStart and Support Software CD. Support diskettes are "punched-out" from data stored on the SmartStart and Support Software CD. The support includes:

- Array Configuration Utility
- Operating System support
- Diagnostic utilities
- Server utilities
- Erase utility
- System and Option ROMPaq diskettes

To run the Diskette Builder, use a workstation running Windows 95, Windows 98, Windows NT, or Windows 2000. You also need several 1.44-MB diskettes. All data on the diskettes will be overwritten. Insert the SmartStart and Support Software CD into the workstation drive. The CD automatically runs the Diskette Builder utility; however, if the system does not support the "auto-run" feature, use Windows Explorer to run [CD-ROM DRIVE]:\DSKBLDR\DSKBLDR.EXE.

Compaq Survey Utility

The Compaq Survey Utility is an online information-gathering agent that runs on servers, collecting critical hardware and software information from various sources.

The Compaq Survey Utility outputs the information it gathers into *SURVEY.TXT*. This file is located in [Windows NT Drive]:\COMPAQ\SURVEY for Windows NT, and SYS:SYSTEM for NetWare. If a significant change occurs between data-gathering intervals, the previous information is marked, and *SURVEY.TXT* is overwritten to reflect the latest configuration and changes. This file allows you to keep a historical record of change events for server hardware and software.

The Compaq Survey Utility automatically runs at startup and on specified time intervals. You can modify the data-gathering interval by modifying the command-line parameters.

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Installing Survey

Installing Survey with SmartStart Installation

To install the Compaq Survey Utility through the SmartStart Setup process, refer to the SmartStart Installation poster. This method installs an operating system and Compaq products on a server. Do not use this method to add the Compaq Survey Utility to an existing system.

Installing Survey from Compaq Management CD

To install the Compaq Survey Utility from the Compaq Management CD on a Windows NT server, you must be logged on to the Windows NT server with administrator access rights. After you log in, enter the following at the Windows NT command prompt:

```
[CD-ROM DRIVE]:\Survey\Win-NT\Eng\Survey -i -c
```

If the target server does not have a CD drive, use Diskette Builder to create Survey Utility diskettes.

To install the Compaq Survey Utility from the Compaq Management CD on a NetWare server, enter the following at the NetWare system prompt:

```
Load [CD-ROM DRIVE]:\Survey\Netware\Eng\Sinstall
```

Running Survey

After the Compaq Survey Utility is installed, it gathers information by default every Wednesday at noon and at every powerup. You can change the Compaq Survey Utility data-gathering interval using command-line parameters. You can also force a one-time, immediate collection.

If you want the Compaq Survey Utility to perform a one-time immediate collection on a Windows NT server, enter the following at the Windows NT command prompt: **Survey**

If you want the Compaq Survey Utility to perform a one-time immediate collection on a NetWare server, you need to unload the utility, and then reload it. Enter the following at the NetWare system prompt: **Unload Survey**

At the next NetWare system prompt, enter the following: **Load Survey**

You can also change the Compaq Survey Utility data-gathering interval using command-line parameters.

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Compaq Diagnostics Utility

The Diagnostics Utility is accessed from diskette. A diskette can be created from the SmartStart and Support Software CD. To run Diagnostics, insert the Diagnostics diskette and restart the server. The server powers up from the diskette and runs the Diagnostics Utility.

Automatic Server Recovery (ASR)

ASR is a feature in ProLiant servers that causes the system to restart in the event of a catastrophic OS error like a blue-screen, ABEND (abnormal end), or panic. A system failsafe timer, the ASR timer, is started when the Compaq System Management driver, also known as the health driver, is loaded. The timer is reset periodically during normal OS operation, but in the event of OS failure, the timer expires and restarts the server. ASR increases server up time by restarting the server within 10 minutes after the system stops responding. The Compaq Insight Manager console notifies you in the event of a server ASR. You can disable ASR from the Compaq Insight Manager console.

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Appendix A

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your server is assigned a Compaq series number. The Compaq series number for the Compaq ProLiant ML330e/ML330 servers is Series ES1014. The series number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this series number. This series number should not be confused with the marketing name or model number for your server.

Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (personal computers, for example). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

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The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. After the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user is required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause barmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

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Declaration of Conformity for Products Marked with the FCC Logo—United States Only

This device complies with Part 15 of the FCC Rules and is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

Or

1-800-652-6672 (1-800-OK-COMPAQ). For continuous quality improvement, calls may be recorded or monitored.

For questions regarding this FCC declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or

281-514-3333

To identify this product, refer to the Part, Series, or Model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

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Mouse Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low-Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN55024 (IEC61000-4-2,3,4,5,6,8,11) - Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) – Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) – Power Line Flicker
- EN60950 (IEC950) - Product Safety

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Japanese Notice

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Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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Battery Replacement Notice

Your server is provided with a lithium manganese dioxide battery. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. For more information about battery replacement or proper disposal, contact your Compaq authorized reseller or authorized service provider.

WARNING: Your server contains an internal lithium manganese dioxide battery. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose to temperatures higher than 60°C.
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the Compaq spare designated for this product.

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to Compaq, your Compaq authorized service resellers or authorized service providers, or their agents.

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Laser Compliance

The CD-ROM drive contains a laser diode of gallium aluminum arsenide (GaAlAs) emitting in the wavelength range of 780 ± 35 nm. All Compaq systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous laser radiation.

WARNING: Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- Do not try to open the unit enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only Compaq authorized service providers to repair the unit.

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

This marking on the internal CD-ROM drive indicates that the product is classified as a CLASS 1 LASER PRODUCT.

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Power Cords

If you were not provided with a power cord for your server, you should purchase a power cord that is approved for use in your country.

The power cord must be rated for the product and for the voltage and current marked on the electrical ratings label of the product. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the diameter of the wire must be a minimum of 1.00 mm^2 or 18AWG, and the length of the cord must be between 1.8 m (6 feet) and 3.6 m (12 feet). If you have questions about the type of power cord to use, contact your Compaq authorized service provider.

A power cord must be routed so that it is not likely to be walked on or pinched by items placed upon it or against it. Particular attention should be paid to the plug, electrical outlet, and the point where the cord exits from the product.

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Appendix B

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

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Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have a Compaq authorized reseller install the part.

NOTE: For more information on static electricity, or assistance with product installation, contact your Compaq authorized reseller.

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Appendix C

Server Error Messages

For a complete listing of error messages provided for your server, refer to the *Compaq Servers Troubleshooting Guide*.

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Appendix D

Troubleshooting

This appendix provides specific troubleshooting information for the Compaq ProLiant ML330e/ML330 server and is to be used to find details about server startup and installation problems.

See Appendix E for information on LEDs, switch settings, and more.

For information about general troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *Compaq Servers Troubleshooting Guide*, also included in your user documentation.

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This appendix includes the following topics:

- When the Server Does Not Start

  You are provided with step-by-step instructions on what to try and where to go for help for the most common problems encountered during the initial Power-On Self-Test (POST). A successful startup requires the server to complete this test eacb time you power up, before the server can load the operating system and start running software applications.

- Problems After Initial Boot

  After your server has passed the POST, you may still encounter errors, such as an inability to load your operating system. You are provided with instructions on what to try and where to go for help when you encounter errors after the server completes the POST.

- Other Information Resources

  This section provides a list of reference information available for your server.

For troubleshooting information beyond the scope of this guide, both general and specific to the ProLiant ML330e/ML330 server, see "Other Information Resources" later in this appendix.

When the Server Does Not Start

Follow the sequence of steps below when the server does not start:

1. Verify that the server and monitor are plugged into a working outlet.
2. Make sure that your power source is working properly:
   - Check status using the Power On/Standby LED. See "Front Panel LEDs" in Appendix E for the location of the Power On/Standby LED.
   - Was the Power On/Standby switch pressed firmly?

     Refer to the "Power Source" section in the *Compaq Servers Troubleshooting Guide* for details on what else to check.

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3. If the system does not complete the Power-On Self-Test (POST) or start loading an operating system, refer to the "General Loose Connections" section in the *Compaq Servers Troubleshooting Guide*.

   NOTE: If the server is rebooting repeatedly, verify that the system is not restarting due to an Automatic Server Recovery (ASR) powerup caused by another problem. Check Compaq Insight Manager for notification of this event. Refer to the *Compaq Servers Troubleshooting Guide* for more information.

4. Restart the server.
5. Check for the following "normal powerup sequence" to verify that your system meets the minimal hardware requirements and is powered up under normal operation:

   a. The front panel Power On/Standby LED turns green.

   b. The fans start up.

   c. The server ROM initializes the server in the following sequence:

      1) Video initialization—The Compaq initialization screen is displayed.

      2) Processor initialization

      3) Memory test

      4) Memory initialization

      5) Diskette drive

      6) SCSI devices (if applicable)

      7) ATA devices (if applicable)

      8) Option ROM

      NOTE: If a monitor is connected to the server, status information is displayed on the screen.

   d. The operating system loads to complete the boot process.

If the problem persists, continue with the following section, "Diagnosis Steps."

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Diagnosis Steps

If your server does not power up, or powers up but does not complete the Power-On Self-Test (POST), answer the questions in Table D-1 to determine appropriate actions based on the symptoms observed. According to the answers you give, you will be directed to the appropriate table in the section that immediately follows. That table outlines possible reasons for the problem, options available to assist in diagnosis, possible solutions, and references to other sources of information.

Table D-1
Diagnosis Steps

Question	The Next Step
Question 1: Is the front panel Power-On/Standby LED on? (either solid green or flashing)	If no, go to Table D-2. If yes, continue to Question 2.
Question 2: Can you see anything on your monitor?	If no, go to Table D-3. If yes, video is available for diagnosis. Determine next action by observing POST progress and error messages. Refer to the *Compaq Servers Troubleshooting Guide* for a complete description of each POST error message.

Note: If your server attempts to load the operating system, go to "Problems After Initial Boot" later in this appendix.

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Table D-2
Front Panel Power-On/Standby LED Is Not On

See "LEDs" later in this appendix for a complete description of system status LEDs.

WARNING: To reduce the risk of electric shock or damage to the equipment, before opening access panels to reseat components, power down the server and disconnect the power cord.

CAUTION: When the Pentium III FC-PGA processor is reseated or its heatsink removed, the thermal seal between the heatsink and processor is broken, the thermal effectiveness of the heatsink is compromised, and the heatsink must be replaced.

Possible Reasons	The Next Step
There is no AC power connection. Power button was not firmly pressed. Power button connector cable is not properly connected to the system board. Processor has failed or is not properly seated. Power supply has failed or is not connected.	1. Check the power cables. Make sure that they are fully connected. 2. Press the power button. 3. Check the power source. Refer to "Power Problems" in the *Compaq Servers Troubleshooting Guide* for further options. 4. Reconnect the power button cable to the system board. Refer to section "System Board Components" in Chapter 1 for the location of the power button connector. 5. Power down the server. Reseat all expansion boards, and verify that all cables are securely connected. See Chapter 3 for complete instructions. Refer to "General Hardware Problems" in the *Compaq Servers Troubleshooting Guide* for tips on proper procedures. 6. If these steps do not correct the problem, the most likely cause lies either in the power supply subsystem or the processor. Contact your Compaq authorized service provider for further technical support. Refer to the *Compaq Servers Troubleshooting Guide* for a list of Compaq authorized service providers.

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Table D-3
Server Does Not Have Video

WARNING: To reduce the risk of electric shock or damage to the equipment, before opening access panels to reseat components, power down the server and disconnect the power cord.

CAUTION: When the Pentium III FC-PGA processor is reseated or its heatsink removed, the thermal seal between the heatsink and processor is broken, the thermal effectiveness of the heatsink is compromised, and the heatsink must be replaced.

Possible Reasons	The Next Step
Video may not be properly connected. Switches may not be correctly set on the Server Feature Board. If an optional video card was installed, the monitor cable may not be correctly connected. The monitor may be connected to the wrong video connector.	1. Verify that the monitor has power and that the monitor cable is securely connected. If more than one video adapter is installed, make sure that the monitor is connected to the correct video card. 2. Verify that the monitor is functional by connecting it to a known working server. 3. Verify that the switch settings on the Server Feature Board are correctly set. See Appendix E for switch settings. 4. Power down the server. Reseat all cards and memory modules, and verify all cable connections. See Chapter 3 for bezel and side panel removal. 5. Restart the server. 6. Listen for audible indicators, such as a series of beeps. A series of beeps indicates the presence of a Power-On Self-Test (POST) error message. Refer to the *Compaq Servers Troubleshooting Guide* for a complete listing of possible POST error messages. 7. Refer to "Video Problems" in the *Compaq Servers Troubleshooting Guide*. 8. If these steps do not correct the problem, contact your Compaq authorized service provider for further technical support.

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Problems After Initial Boot

After your server has passed the Power-On Self-Test (POST), you may still encounter errors, such as an inability to load your operating system. Use Table D-4 to troubleshoot server installation problems that occur after the initial startup.

For updated information on supported operating systems, log on to the Internet at

http://www.compaq.com/products/servers/platforms/

NOTE: If the server is rebooting repeatedly, verify that the system is not restarting due to an Automatic Server Recovery (ASR) powerup caused by another problem. Check Compaq Insight Manager for notification of this event. Refer to the *Compaq Servers Troubleshooting Guide* for more information.

Refer to the *Compaq Servers Troubleshooting Guide* for the following:

- Information you will need to collect when diagnosing software problems and to provide when contacting support.
- Instructions on how to upgrade your operating system and its drivers, what recovery options are available, and advice on minimizing downtime

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Table D-4
Problems After Initial Boot

Problem	Possible Cause	Possible Solution
System cannot load SmartStart.	Wrong version of SmartStart is being installed.	1. Check the SmartStart release notes and user documentation. 2. Refer to the Compaq website to verity the version of SmartStart.
	The CD-ROM/diskette drive assembly is not set as a bootable device.	1. Run the setup utility for your server For the ProLiant ML330 server, press **F10** to run the BIOS Setup utility. For the ProLiant ML330e server, press **F9** to run the ROM Based Setup Utility (RBSU) 2. Set defaults and exit the utility. 3. Rerun this utility to verity the system configuration. Refer to Chapter 5 for complete instructions on the use of the setup utilities.
	The CD-ROM/diskette drive assembly is either not installed, or is not properly connected.	1. Power down the server. 2. Verity that the CD-ROM/diskette drive assembly is installed. 3. Remove and reseat the CD-ROM/diskette drive assembly. 4. Check the cable between the backplane and the CD-ROM/diskette drive assembly to ensure proper connection. Refer to the *Compaq ProLiant ML330e/ML330 Maintenance and Service Guide* for connection information. If the cable is not the problem, refer to "CD-ROM Problems" in the *Compaq Servers Troubleshooting Guide*.
	Diskette in CD-ROM/diskette drive assembly is preventing the system from loading.	Remove the diskette.

continued

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Table D-4
Problems After Initial Boot *continued*

Problem	Possible Cause	Possible Solution
SmartStart fails during installation.	Operating system has not been selected.	1. Run the setup utility for your server For the ProLiant ML330 server, press **F10** to run the BIOS Setup utility. For the ProLiant ML330e server, press **F9** to run the ROM Based Setup Utility (RBSU) 2. Select the primary operating system. Refer to Chapter 5 for complete instructions on the use of the setup utilities.
	Error occurs during installation.	Follow the error information provided. If it is necessary to reinstall, first run the Compaq System Erase Utility. Refer to the *Compaq Servers Troubleshooting Guide*.
⚠	**CAUTION:** The Compaq System Erase Utility causes the loss of all configuration information, as well as loss of existing data on all connected hard drives. Read "Compaq System Erase Utility" and the associated cautionary statements in the *Compaq Servers Troubleshooting Guide* before performing this operation.	
Server cannot load operating system.	Required operating system step was missed.	Follow these steps: 1. Note at which phase the operating system failed. 2. Remove any loaded operating system components. 3. Refer to your operating system documentation. 4. Reinitiate installation procedures.

continued

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Table D-4
Problems After Initial Boot *continued*

Problem	Possible Cause	Possible Solution
Server cannot load operating system. *continued*	Installation problem occurred.	Refer to your operating system documentation and to the SmartStart release notes.
	Primary hard drive controller installation is incorrect.	Run the setup utility for your server and correct this problem. For the ProLiant ML330 server, press **F10** to run the BIOS Setup utility. For the ProLiant ML330e server, press **F9** to run the ROM Based Setup Utility (RBSU) Refer to Chapter 5 for complete instructions on the use of the setup utilities.
	Hard drive controller order is incorrect.	Run the setup utility for your server and correct this problem. For the ProLiant ML330 server, press **F10** to run the BIOS Setup utility. For the ProLiant ML330e server, press **F9** to run the ROM Based Setup Utility (RBSU) Refer to Chapter 5 for complete instructions on the use of the setup utilities.
	Encountered problem after new hardware was added to the system.	Refer to the documentation provided with the hardware. Remove the new hardware.
	Problem was encountered with hardware added to a new system ordered with a factory-installed operating system (where available).	You must complete the factory-installed operating system software installation BEFORE adding new hardware to the system. Be sure that you are following the instructions provided in the *Factory-Installed Operating System Software Installation Guide*. Remove the new hardware and complete the software installation. Then, reinstall the new hardware.

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Other Information Resources

Refer to the following information in Table D-5 for additional help.

Table D-5
ProLiant ML330e/ML330 Server Troubleshooting Resources

Resource	What it is
Compaq Servers Troubleshooting Guide	This is a resource for obtaining troubleshooting information that is beyond the scope of this document. It includes general hardware and software troubleshooting information for all Compaq ProLiant servers, a complete list of error messages along with an explanation of probable cause, and a list of appropriate measures. This guide ships with your server.
Compaq ProLiant ML330e/ML330 Maintenance and Service Guide	This resource provides a complete list of all replacement parts available, along with step-by-step instructions on installation and replacement. Find this guide on the Compaq website at http://www.compaq.com/support Follow the link for maintenance and service guides, and download the guide provided for your server.

You can access information on warranties and service and support upgrades (*CarePaq*™ services) by logging on to the Internet at

http://www.compaq.com/services/carepaq

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Appendix E

LED Indicators, Switches, and Jumpers

This appendix provides specific troubleshooting information for the Compaq ProLiant ML330e/ML330 server and is to be used to find details about server startup problems, switch settings, LEDs, and more. For information about general troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *Compaq Servers Troubleshooting Guide*, also included in your user documentation.

When you add or remove a component or change a security feature, you must reconfigure the server to recognize these changes. If the system configuration is incorrect, your server may not work properly and you may receive error messages on the screen. Setting the system board switches is part of the reconfiguration process, along with running the BIOS Setup utility, for the ProLiant ML330 server, or the ROM Based Setup Utility (RBSU), for the ProLiant ML330e server.

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This appendix includes the following topics:

- LEDs

  There are several LEDs located on the front, the back, and the inside of your server. These LEDs can communicate the current status of your server components and operations, thus aiding you in diagnosing the problem. You are provided with an illustration of the location of each LED on your server, as well as an explanation of uses and possible statuses in the following section.

- Switches

  There are three switchbanks in your server. Some switch settings may need to be changed from time to time and can cause problems if they are not correctly set. Some switches should not be changed for any reason. You are provided with a list of all switches, a description of what each setting means, and an illustration of where each may be found inside your server.

- Jumpers

  When devices are added to the server, the jumpers on the device may need to be changed. You are provided with information on jumper settings for both SCSI and ATA devices.

For troubleshooting information beyond the scope of this guide, both general and specific to the ProLiant ML330e/ML330 server, see "Other Information Resources" in Appendix D.

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LEDs

A variety of status LEDs are located on the front and back of your server. These LEDs aid you in diagnosing problems by communicating the status of the components and operations of the server. The following ProLiant ML330e/ML330 server LEDs are explained in this appendix.

- System status LEDs (on the front of the server)
  - Power On/Standby and AC power status
  - Hard drive status
- Network controller LEDs (on the back of the server)
  - Network activity status
  - Network link
  - Connection speed

System Status LEDs

The system status LEDs and the power button are located on the front of the server, and are visible when the bezel door is open.

The system status LEDs show:

- Power On/Standby status
- Hard drive status

The power button allows you to:

- Power up the server (provide AC power)
- Place the server in standby mode
- Power down the server

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See Figure E-1 and Table E-1 for an explanation of each possible LED status.

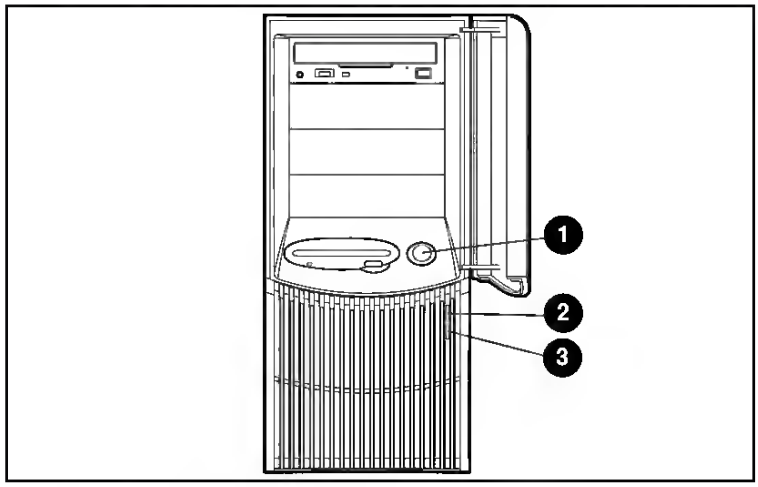

Figure E-1. Power button and system status LEDs

Table E-1
System Status LEDs

Item	Description	Status	Means
❶	Power button	N/A	N/A
❷	Power On/Standby status indicator	Green	System on, AC power OK. Do not remove power from system.
		Flashing	System in standby mode. AC power OK. Do not remove power from system.
		Off	System off, no AC power.
❸	Hard drive status indicator	On or flashing	A hard drive is being accessed.
		Off	No hard drive is currently being accessed.

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Network Controller LEDs

The network controller LEDs are located on the back of the server. They provide the following information:

- If the server is linked to the network
- The speed at which the network is being accessed
- If there is current network activity

Refer to the *Compaq Servers Troubleshooting Guide* for more information on troubleshooting network controller problems.

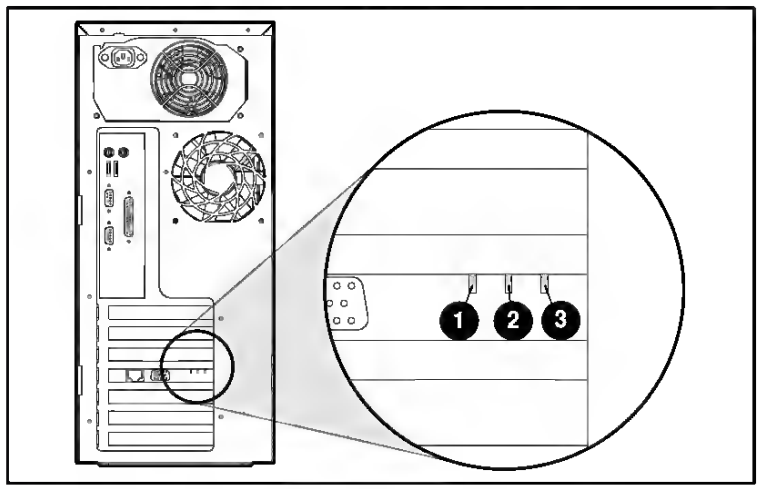

Figure E-2. Network controller LEDs

Table E-2
Network Controller LEDs

Indicator	Status	Means
❶ Speed	Off	10Base-T 10-Mbps (10Base-T Ethernet)
	On	100Base-T 100-Mbps (100Base-T Ethernet)
❷ Link	Off	No network link
	On	Linked to network
❸ Activity	Off	No network activity
	On or flashing	Network activity

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Switches

The ProLiant ML330e/ML330 server contains three switchbanks. Switches on two of the switchbanks may need to be changed from time to time. If they are not correctly set, problems will occur. This chapter explains the use of each nonreserved switch.

- The system configuration switch (SW2) is located on the system board. You may use it to perform the following:
  - Enable or disable power-up password protection.
  - Clear all system configuration information from CMOS and nonvolatile RAM (NVRAM).
  - Enable or disable ROMPaq disaster recovery mode (also known as emergency repair boot mode).
- The reserved processor switch (SW1) is located on the system board. The function of SW1 is not applicable to the ProLiant ML330e/ML330 server.
- The Server Feature Board switch allows you to enable or disable embedded video. Some switches are reserved for the use of Compaq authorized service providers only.

IMPORTANT: Reserved switches are provided for use by Compaq authorized service providers only and must not be changed from the indicated default settings.

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System Configuration Switch (SW2)

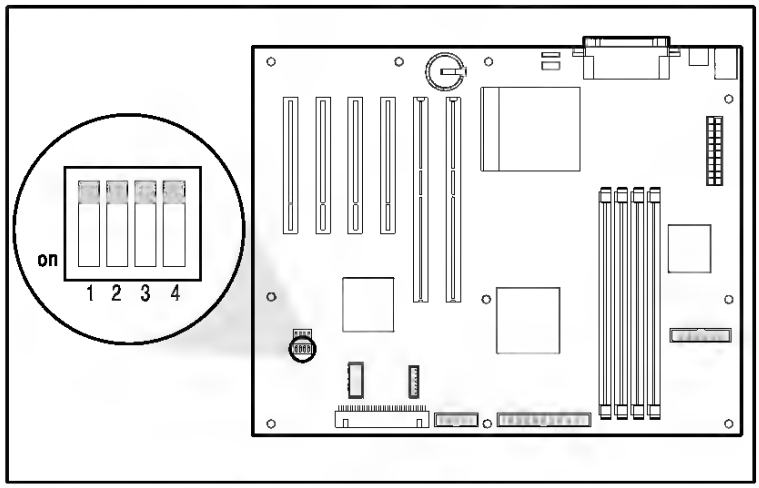

Figure E-3. System configuration switch (SW2) default settings

Table E-3
System Configuration Switch (SW2) Settings

Important: Clearing nonvolatile RAM (NVRAM) deletes your configuration information. See Chapter 5 for complete instructions on configuring your server.

Position	Default	Function	Description	Settings
1	Off	Clear/set up password	Used to disable password	Off = Password enabled On = Password disabled
2	Off	Clear CMOS and NVRAM	Used to clear system configuration settings	Off = Normal On = When server is powered up, all system configuration information is erased.
3	Off	ROMPaq disaster recovery enable	Used to enable ROMPaq disaster recovery mode when system ROM is corrupted	Off = Normal server operations mode On = ROMPaq disaster recovery mode
4	Off	Reserved		

Note: System Configuration Switch (SW2) position 4 is reserved for Compaq authorized service providers only. Do not change the specified default setting for this position.

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Clearing and Resetting System Password Settings

It may be necessary at some time to clear and reset the system password. When the system configuration switch position 1 is set to the **on** position, the system is prepared to clear the system password:

1. Power down the server.
2. Set the switch at position 1 to the **on** position.
3. Restart the server, and wait for confirmation.
4. Power down the server.
5. Set the switch at position 1 to the default **off** position.
6. Restart the server. The password is cleared.

Clearing and Resetting System Configuration Settings

It may be necessary at some time to clear and reset system configuration settings. When the system configuration switch position 2 is set to the **on** position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM:

IMPORTANT: Clearing nonvolatile RAM (NVRAM) deletes your configuration information. Refer to Chapter 5 for complete instructions on configuring your server.

1. Power down the server.
2. Set the system configuration switch position 2 to the **on** position.
3. Power up the server.

   All configuration settings are now erased and all system operations halt.
4. Power down the server.
5. Reset the position 2 switch to the default **off** position.
6. Power up the server.
7. Reset all system configuration settings:
   - For ProLiant ML330 servers, press **F10** to run the BIOS Setup utility
   - For ProLiant ML330e servers, press **F9** to run the ROM Based Setup Utility (RBSU)

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Enabling ROMPaq Disaster Recovery Mode

A corrupted system ROM requires that you recreate the ROM BIOS by a process called ROM flash. This operation can be accomplished only when the system is in disaster recovery (emergency repair boot) mode. Set the system configuration switch position 3 to **on** to enable ROMPaq disaster recovery mode:

IMPORTANT: Before performing this operation, refer to the *Compaq Servers Troubleshooting Guide* for complete instructions on disaster recovery.

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Reserved Processor Switch (SW1)

IMPDRTANT: The function of the reserved processor switch is not applicable to the ProLiant ML330e/ML330 server.

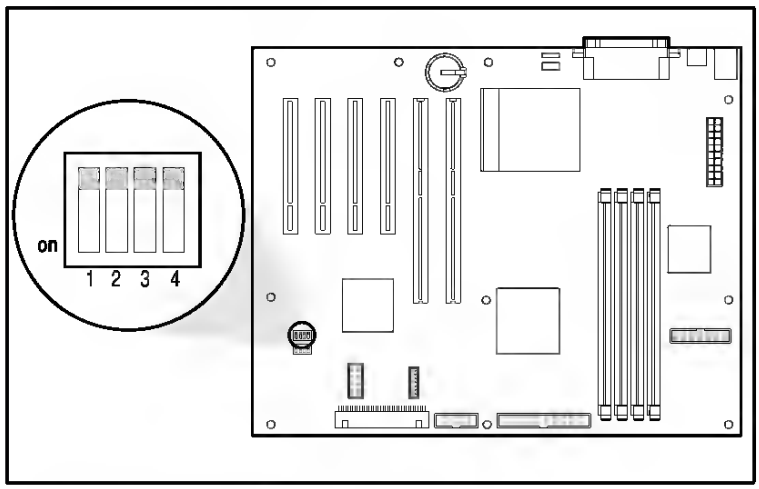

Figure E-4. Processor configuration switch (SW1)

Table E-4
Processor Configuration Switch (SW1) Settings

Position	Default	Function/Description
1	Off	Reserved
2	Off	Reserved
3	Off	Reserved
4	Off	Reserved

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Server Feature Board Switch

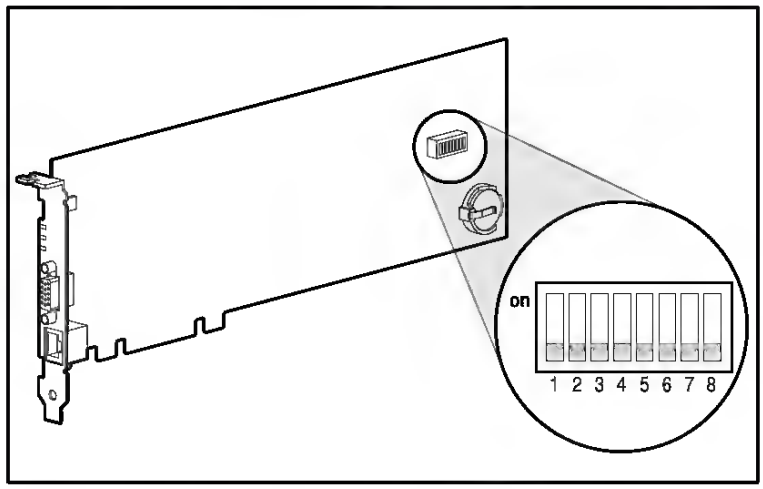

Figure E-5. Server Feature Board switch default settings

Table E-5
Server Feature Board Switch Settings

Position	Default	Function	Description	Settings
1	Off	Enable embedded video.	Used to disable the onboard video controller when an optional video adapter is installed.	Off = Embedded video is enabled. On = Embedded video is disabled.
2	Off	Reserved		
3	Off	Reserved		
4	Off	Reserved		
5	Off	Reserved		
6	Off	Reserved		
7	Off	Reserved		
8	Off	Reserved		

Important: Positions 2 through 8 are reserved for Compaq authorized service providers only. Do not change these switches from the indicated default settings.

NOTE: For information on troubleshooting video problems, refer to "Video Problems" in the *Compaq Servers Troubleshooting Guide*.

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Jumper Settings

SCSI Device Jumper Settings

No two SCSI devices connected to the same SCSI controller can have the same SCSI ID. If another SCSI device is connected to the same controller, check its SCSI ID before beginning the installation procedure for the additional device. The SCSI ID is set by jumpers located on each device. For more information. refer to your SCSI device option documentation.

ATA Device Jumper Settings

When installing any ATA devices, make sure that the jumper on the device is set to Cable Select. This option allows the cable to determine which device is the primary drive and which is the secondary drive. For information on cabling ATA devices, see Chapter 4, "Cabling Guidelines."

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Appendix F

Specifications

Server Specifications

Table F-1
ProLiant ML330e/ML330 Server Specifications

Dimensions	
Height	42.0 cm (16.5 in)
Depth	19.1 cm (7.5 in)
Width	51.5 cm (20.25 in)
Approximate weight	15.42 kg (34 lb)
Input requirements (per power supply)	
Rated input voltage	90 VAC to 132 VAC (low range) 180 VAC to 264 VAC (high range)
Rated input frequency	47 to 60 Hz
Rated input current	Less than 8A RMS at 90 VAC (with maximum load)
Input power (Btu/hr)	1560 Btu/hr

continued

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Table F-1
ProLiant ML330e/ML330 Server Specifications *continued*

Power supply output power		
Rated steady-state power	200 W	
Maximum peak power	250 W	
Temperature range (see Note)		
Operating	50° to 93°F	10° to 33°C
Shipping	-40° to 150°F	-40° to 66°C
Relative humidity (noncondensing)		
Operating	20% to 80%	20% to 80%
Nonoperating	5% to 90%	5% to 90%
Maximum wet bulb temperature	101.7°F	38.7°C

Note: All temperature ratings shown are for sea level. There is an altitude derating of 1°C per 300 m to 3,000 m (1.8°F per 1,000 ft to 10,000 ft).

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Minimum Hardware Configuration

Make sure that your server meets the requirements for minimum hardware configuration. During the troubleshooting process, it may be necessary to reduce your system to its minimum configuration, reinstalling options one at a time to determine the cause of failure.

Table F-2
Minimum Hardware Configuration

Component	Minimum Specification
Processors	A processor must be installed in the processor slot.
Server Feature Board	The Server Feature Board is installed in PCI slot 3. The Server Management Information Cable (SMIC) must be connected.
Fans	A system fan must be installed and connected to the system board, and a CPU fan must be installed and connected to the CPU heatsink.
Memory	At least one slot must be populated with an ECC 133-MHz Registered SDRAM DIMM.

NOTE: The maximum memory configuration is 4 x 512-MB memory modules.

Also refer to the *Compaq ProLiant ML330e/ML330 Server Maintenance and Service Guide* at the Compaq website:

http://www.compaq.com/support

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Supported Operating Systems

To operate properly, your server must have a supported operating system. Table F-3 lists the operating systems and version numbers supported by the ProLiant ML330e/ML330 server.

CAUTION: If your server has a factory-installed operating system, configure the server using the instructions in the *Compaq Factory-Installed Operating System Software Installation Guide* or data will be lost.

Table F-3
Supported Operating Systems

ProLiant ML330 Servers	ProLiant ML330e Servers
Microsoft	
Microsoft Windows NT Server 4.0	Microsoft Windows NT Server 4.0
Microsoft Windows NT Server 4.0 Terminal Server Edition 4.01	Microsoft Windows NT Server 4.0, Terminal Server Edition 4.01
Microsoft Windows 2000 Server	Microsoft Windows 2000 Server (when available)
	Microsoft Small Business Server 2000
Linux	
Red Hat Linux	Red Hat Linux
SuSE Linux	SuSE Linux
TurboLinux	TurboLinux
Caldera OpenLinux eServer	Caldera OpenLinux eServer
Novell	
Novell Netware 3.2, 4.2, 5.0, 5.1	
Novell Small Business Suite 4.2, 5.0	
SCO	
SCO OpenServer 5.05	
SCO UnixWare 7.1, 7.1.1	

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For updated information on supported operating systems, log on to the Internet at

http://www.compaq.com/products/servers/platforms/

or download a spreadsheet of supported operating systems for Compaq servers at

ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

For the latest information on Linux version and support, log on to the Internet at

http://www.compaq.com/products/servers/linux.html

Drivers

The ProLiant ML330e/ML330 server features new hardware that does not have driver support on all operating system installation media. It is recommended that you use SmartStart and its Assisted Path feature to install your operating system and the latest driver support. If you do not use SmartStart to install your operating system, drivers for some of the new hardware are required. These drivers, as well as other options drivers, ROM images, and value-add software can be downloaded from

http://www.compaq/com/support/files/server/us/index.html

For more information on drivers, refer to "Maintaining Current Drivers" in the *Compaq Servers Troubleshooting Guide*.

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